Analyzing the Impact and Perception of Artificial Intelligence in Art and Design since Modern AI Renaissance

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Resumen

La tesis explora el impacto y la percepción de la inteligencia artificial (IA) en los campos del arte y el diseño desde el renacimiento contemporáneo de la IA (mitad de la década de 2010). Partiendo de un enfoque interdisciplinar, el autor investiga cómo las tecnologías de IA y su la percepción pública están transformando la producción creativa y los discursos culturales.

El punto de partida es la hipótesis de que la irrupción de modelos de lenguaje e imágenes está generando un cambio de paradigma en la creación artística y en el diseño. La IA no es considerada un mero instrumento técnico, sino un agente transformador de prácticas productivas, procesos de aprendizaje, marcos estéticos y formas de recepción cultural. Asimismo, la investigación subraya que la percepción social de la IA, con sus entusiasmos y temores, resulta tan decisiva como su eficacia técnica.

La investigación se estructura en cuatro ejes: (1) un marco conceptual que sitúa la IA como fenómeno técnico y cultural, apoyado en autores como Debray, Latour y Manovich; (2) el análisis del discurso mediático; (3) la investigación empírica con estudiantes; y (4) la documentación de prácticas artísticas.

En primer lugar, se establece un marco conceptual que sitúa la inteligencia artificial como fenómeno simultáneamente técnico y cultural, apoyándose en las aportaciones de autores como Régis Debray, Bruno Latour y Lev Manovich. Este enfoque permite comprender la IA más allá de su dimensión instrumental, reconociéndola como parte de transformaciones epistémicas y estéticas de mayor alcance.

En segundo lugar, se analizan críticamente las narrativas producidas por Wired, una revista de tecnología emergente, entre 2018 y 2023, a través de técnicas de minería de texto y análisis de sentimientos aplicadas a más de 4.500 artículos. Este examen revela un discurso crecientemente polarizado, que oscila entre visiones utópicas y distópicas, reflejando tensiones culturales más amplias.

En tercer lugar, se explora la percepción de la Inteligencia Artificial de estudiantes de arte y diseño mediante encuestas cuantitativas y cualitativas. Los resultados evidencian una ambivalencia marcada: si bien se reconoce el potencial creativo y democratizador de la IA, también se manifiestan preocupaciones éticas en torno a la autoría, la originalidad y el posible impacto en las trayectorias

profesionales futuras. Los resultados de este estudio muestran la evolución de las percepciones en los tres años desde el impacto de la IA generativa.

En cuarto lugar, la tesis incorpora investigaciones basadas en la práctica artística, mediante la producción y exposición de obras que combinan recursos tradicionales con tecnologías de IA generativa. Estas experiencias no solo generan objetos estéticos, sino que actúan como dispositivos de reflexión crítica desde el interior mismo del proceso creativo.

En conclusión, el trabajo propone un marco teórico-práctico que articula de manera coherente los datos empíricos, los discursos mediáticos y las prácticas artísticas, ofreciendo así una visión integrada y crítica del fenómeno.

Las conclusiones señalan que la IA está reconfigurando profundamente el ecosistema del arte y el diseño, afectando tanto a herramientas y lenguajes como a estructuras educativas y profesionales. Ante ello, se plantea la necesidad de integrar estas tecnologías en los programas formativos desde una perspectiva ética, inclusiva y crítica. La figura del artista emerge, así, no solo como usuario, sino como mediador entre sistemas técnicos, sensibilidad humana y construcción cultural, capaz de abrir nuevos horizontes para la creatividad en la era algorítmica.

Palabras Clave: Inteligencia artificial; Arte digital; Diseño gráfico; Creatividad algorítmica; Cultura digital; Percepción social; Narrativas mediáticas; Investigación basada en la práctica; Humanidades digitales; Estética computacional; Ética y tecnología

Resum

La tesi explora l'impacte i la percepció de la intel·ligència artificial (IA) en els camps de l'art i el disseny des del renaixement contemporani de la IA (meitat de la dècada de 2010). Partint d'un enfocament interdisciplinari, l'autor investiga com les tecnologies d'IA i la seua percepció pública estan transformant la producció creativa i els discursos culturals.

El punt de partida és la hipòtesi que la irrupció de models de llenguatge i imatges està generant un canvi de paradigma en la creació artística i en el disseny. La IA no és considerada un mer instrument tècnic, sinó un agent transformador de pràctiques productives, processos d'aprenentatge, marcs estètics i formes de recepció cultural. Així mateix, la investigació subratlla que la percepció social de la IA, amb els seus entusiasmes i temors, resulta tan decisiva com la seua eficàcia tècnica.

La investigació s'estructura en quatre eixos: (1) un marc conceptual que situa la IA com a fenomen tècnic i cultural, recolzat en autors com Debray, Latour i Manovich; (2) l'anàlisi del discurs mediàtic; (3) la investigació empírica amb estudiants; i (4) la documentació de pràctiques artístiques.

En primer lloc, s'estableix un marc conceptual que situa la intel·ligència artificial com a fenomen simultàniament tècnic i cultural, recolzant-se en les aportacions d'autors com Régis Debray, Bruno Latour i Lev Manovich. Este enfocament permet comprendre la IA més enllà de la seua dimensió instrumental, reconeixent-la com a part de transformacions epistèmiques i estètiques d'un abast major.

En segon lloc, s'analitzen críticament les narratives produïdes per *Wired*, una revista de tecnologia emergent, entre 2018 i 2023, a través de tècniques de mineria de text i anàlisi de sentiments aplicades a més de 4.500 articles. Este examen revela un discurs creixentment polaritzat, que oscil·la entre visions utòpiques i distòpiques, reflectint tensions culturals més àmplies.

En tercer lloc, s'explora la percepció de la intel·ligència artificial d'estudiants d'art i disseny mitjançant enquestes quantitatives i qualitatives. Els resultats evidencien una ambivalència marcada: si bé es reconeix el potencial creatiu i democratitzador de la IA, també es manifesten preocupacions ètiques al voltant de l'autoria, l'originalitat i el possible impacte en les trajectòries professionals futures.

Els resultats d'este estudi mostren l'evolució de les percepcions en els tres anys des de l'impacte de la IA generativa.

En quart lloc, la tesi incorpora investigacions basades en la pràctica artística, mitjançant la producció i exposició d'obres que combinen recursos tradicionals amb tecnologies d'IA generativa. Estes experiències no sols generen objectes estètics, sinó que actuen com a dispositius de reflexió crítica des de l'interior mateix del procés creatiu.

En conclusió, el treball proposa un marc teòric-pràctic que articula de manera coherent les dades empíriques, els discursos mediàtics i les pràctiques artístiques, oferint així una visió integrada i crítica del fenomen.

Les conclusions assenyalen que la IA està reconfigurant profundament l'ecosistema de l'art i el disseny, afectant tant ferramentes i llenguatges com estructures educatives i professionals. Davant això, es planteja la necessitat d'integrar estes tecnologies en els programes formatius des d'una perspectiva ètica, inclusiva i crítica. La figura de l'artista emergeix, així, no sols com a usuari, sinó com a mediador entre sistemes tècnics, sensibilitat humana i construcció cultural, capaç d'obrir nous horitzons per a la creativitat en l'era algorítmica.

Resume

The thesis explores the impact and perception of artificial intelligence (AI) in the fields of art and design since the contemporary renaissance of AI (mid-2010s). Taking an interdisciplinary approach, the author investigates how AI technologies and their public perception are transforming creative production and cultural discourses.

The starting point is the hypothesis that the rise of language and image models is generating a paradigm shift in artistic creation and design. AI is not regarded as a mere technical tool, but as a transformative agent of productive practices, learning processes, aesthetic frameworks, and forms of cultural reception. Likewise, the research underlines that the social perception of AI, with its enthusiasm and fears, proves to be as decisive as its technical effectiveness.

The study is structured around four axes: (1) a conceptual framework that situates AI as both a technical and cultural phenomenon, drawing on authors such as Debray, Latour, and Manovich; (2) the analysis of media discourse; (3) empirical research with students; and (4) the documentation of artistic practices.

First, a conceptual framework is established that positions artificial intelligence as a phenomenon that is simultaneously technical and cultural, drawing on the contributions of authors such as Régis Debray, Bruno Latour, and Lev Manovich. This approach makes it possible to understand AI beyond its instrumental dimension, recognizing it as part of broader epistemic and aesthetic transformations.

Second, the narratives produced by *Wired*, a magazine on emerging technology, between 2018 and 2023 are critically analyzed through text mining and sentiment analysis techniques applied to more than 4,500 articles. This examination reveals an increasingly polarized discourse, oscillating between utopian and dystopian visions, reflecting broader cultural tensions.

Third, the perception of artificial intelligence among art and design students is explored through quantitative and qualitative surveys. The results reveal a marked ambivalence: while the creative and democratizing potential of AI is acknowledged, ethical concerns are also raised regarding authorship, originality, and the possible impact on future professional trajectories. The findings of this study show the evolution of perceptions over the three years since the emergence of generative AI.

Fourth, the thesis incorporates practice-based artistic research through the production and exhibition of works that combine traditional resources with generative AI technologies. These experiences not only generate aesthetic objects but also act as devices for critical reflection from within the creative process itself.

In conclusion, the work proposes a theoretical-practical framework that coherently articulates empirical data, media discourses, and artistic practices, thus offering an integrated and critical vision of the phenomenon.

The conclusions indicate that AI is profoundly reshaping the ecosystem of art and design, affecting not only tools and languages but also educational and professional structures. In light of this, the need is raised to integrate these technologies into training programs from an ethical, inclusive, and critical perspective. The figure of the artist emerges, therefore, not only as a user but also as a mediator between technical systems, human sensitivity, and cultural construction, capable of opening new horizons for creativity in the algorithmic age.

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1
Introduction

1.1. Background of the research

The foundations of the present research, which culminates in this doctoral thesis, lie in the author's distinctive educational and professional trajectory, marked by an interdisciplinary approach that integrates technical-scientific knowledge with humanistic inquiry. The technical background is rooted in academic education in electronic engineering at the Politecnico di Milano, followed by advanced studies in experimental physics at Radboud Universiteit in the Netherlands. In parallel, the author has developed expertise in the field of visual culture, with a particular focus on photography and visual design, through the completion of a Master in *Photography and Visual Design* at the *Nuova Accademia di Belle Arti* (NABA), as well as through an ongoing engagement in contemporary artistic practice as a creator.

Considering this hybrid path, the current investigation positions itself at the intersection of art and technology, adopting the critical and design-oriented perspective of an Artist and Creation Technologist. Within a historical context

increasingly characterized by polarized attitudes towards technology, fluctuating between irrational hype and dystopian fear, this research seeks to examine the role of emerging artificial intelligence technologies not only from a technical-functional standpoint but also in relation to the discourses, understood as systems of values, ideologies, and beliefs, that shape their reception and use in contemporary society (Goddard, 2017). In this regard, scientific research combined with artistic practice represents a privileged means of critically and experimentally engaging with such technologies. On the one hand, it allows for direct interaction with new tools and systems, thereby facilitating a deeper understanding of their benefits and limitations; on the other hand, it provides a framework for the development of speculative visions that can contribute to anticipating its impact in near-future scenarios.

Since the mid-2010s, the author initiated a systematic exploration of various emergent technological tools, including artificial intelligence. This exploration developed along two interconnected trajectories. On the one hand, these technologies were employed as instruments for artistic creation; on the other, some of the resulting artworks began to address, either implicitly or explicitly, the very nature and implications of the technologies themselves. This dual engagement was grounded in the awareness that technologies, particularly those connected to electronics and computing, are foundational in shaping the structures and dynamics of contemporary reality. Therefore, throughout this process, the author has become a direct witness not only to the rapid development of these technical instruments, but also to the evolving theoretical, cultural, and ethical discourses that have come to surround and define their societal impact.

Therefore, the present text is not only the outcome of three years of doctoral research within the fields of cultural and communication industries, but it is also closely linked with a fragmented personal and professional trajectory. This trajectory reflects a continuous effort to integrate experiences and passions that, at times, appear dichotomous or divergent in nature.

1.2. Framing Historical Period

The contemporary moment is marked by an unprecedented acceleration of innovation. Advancements in neural networks (NNs), natural language processing (NLP), and generative models - such as GPT, DALL·E, and MidJourney - are driving

rapid (OpenAI, 2019) (OpenAI, 2021) (Midjourney, 2022). These innovations are not confined to isolated sectors but could create ripple effects across industries and cultures, reshaping societal structures and interactions at a remarkable pace.

The period since the emergence of large language models (LLMs) and text-to-image generators could mark a transformative epoch in human history. Since these tools were launched into the mass market, this era could be suitably described as the *Dawn of AI-Generated Content* or the *Epoch of AI-Augmented Creation*. What distinguishes this period is the convergence of computational capabilities within the creative and cultural domains, suggesting a fundamental transformation in production and perception. These aspects could fundamentally reshape how human beings conceptualize, produce, and interact with artistic and design outputs. Furthermore, it could represent a critical juncture, similar to past technological revolutions, but with distinct features that set it apart.

Artificial intelligence's impact in creative fields could be situated within the broader trajectory of industrial revolutions throughout history, each of which reshaped society. Despite their differences in technological content and historical context, these revolutions tend to share several defining features that allow them to be understood as part of a broader, recurring pattern of transformation. At the heart of each industrial revolution lies a technological breakthrough, an innovation or a constellation of innovations, that radically alters the means of production. From the steam engine in the late 18th century, to the harnessing of electricity and the rise of the assembly line in the 19th, to the advent of computing and automation in the 20th, and now to artificial intelligence in the 21st century. These technological shifts have consistently served as catalysts for profound economic and social change.

One of the most immediate and visible consequences of such innovations is a dramatic increase in productivity. Each revolution has enabled the production of more goods and services with less time and labor, redefining notions of efficiency and output across entire industries. This increase in productivity, however, has rarely been a neutral process. It has typically gone hand in hand with major structural shifts in the economy, from agriculture to manufacturing in earlier revolutions, and more recently, from manufacturing to services and information-based industries. These changes in production and economic structure inevitably reverberate in the world of labor. They tend to redefine the nature of work itself, rendering certain skills and professions obsolete while creating entirely new ones.

While such changes often generate new opportunities, they are also accompanied by displacement, uncertainty, and the need for systemic adaptation

In this light, these revolutions need to be seen as complex processes that embody both opportunity and challenge. Moments in which society is compelled to renegotiate their relationship with consolidated concepts. This historical perspective underscores the relevance of understanding AI's current and potential impact and perception, especially in the cultural and creative domain. AI automates intellectual and creative tasks, enhancing human capabilities in areas traditionally reliant on skill, intuition, and experience. Just as the Digital Revolution democratized access to information and computational tools, large language models (LLMs) and AI-based generative algorithms have the potential to democratize creative production, enabling a broader segment of the population to engage in the creation of cultural and artistic content. It is worth noting that these technologies enable individuals, regardless of technical expertise, to access sophisticated tools for artistic and design production. Moreover, AI's ability to generate photorealistic and conceptual imagery recalls the massive impact of the Photographic Revolution. Just as the emergence of photography once challenged traditional conceptions of artistic practice and craftsmanship by enabling the mechanical reproduction of reality, contemporary developments in artificial intelligence similarly call into question foundational notions such as authorship, originality, and nature artistic expression.

1.3. Motivation

The cultural implications of AI in art and design are potentially profound. Every past revolution has challenged previously well-established concepts and ideas. Similarly, AI tools are testing the boundaries of notions while opening new possibilities for creative collaboration both between humans and with humans and machines. This shift raises fundamental questions about the essence of art, the role of intent, and the boundaries of originality. These questions challenge existing cultural paradigms, compelling society to reconsider what it means to create, perceive, and value creative content in an AI-based world.

Furthermore, AI technologies, such as text-to-image generators and LLMs, are dismantling traditional barriers to creative expression. High-level capabilities, once reserved for trained professionals, are now accessible to non-experts. This democratization of creation shifts the emphasis from technical skill to conceptual

and imaginative input, enabling a broader and more diverse range of voices to participate in creative endeavors. The ubiquity of synthetic media, produced using AI, is a defining feature of this period. From advertisements to entertainment, education to personal projects, AI-generated content is becoming a basis of contemporary visual and narrative culture. This proliferation challenges the dominance of traditional artistic and design methodologies, blurring the line between real and synthetic while fostering the emergence of new aesthetic norms. Artists and designers could integrate these technologies in their workflows. This integration could fundamentally modify traditional creative methodologies. AI's ability to rapidly iterate, generate, and refine outputs in seconds facilitates unprecedented levels of experimentation and iteration, enabling creators to explore ideas and forms that were previously constrained by time and resources.

At the same time, these developments raise of AI several ethical and philosophical questions. Issues of ownership, authorship, and intellectual property are increasingly complex in a world where machines can replicate and innovate upon existing works. Cultural discourse also is grappling with the tension between human agency and machine autonomy, particularly in the context of defining the value and intent behind AI-generated creations. These dynamics necessitate robust ethical frameworks to navigate this rapidly evolving landscape.

Additionally, the social perception of technology is as consequential as its technical capabilities. In fact, when new technologies are introduced into society, it is essential not only to assess its tangible impact, measured in terms of economic, functional, or operational outcomes, but also to examine how it is perceived by individuals, institutions, and cultural discourses. Technological artifacts do not enter a social vacuum; rather, they are interpreted, contested, and situated within existing frameworks of meaning. As such, perception plays a critical role in shaping the trajectory of any innovation. Furthermore, perception influences adoption rates, modes of use, regulatory responses, and the broader cultural significance recognized to a given technology. For instance, public enthusiasm or anxiety can accelerate or hinder integration, regardless of the technology's actual capabilities. Moreover, the perceived affordances and threats of new technologies often determine funding priorities, educational responses, and policy development. A failure to account for perception may result in blind spots in implementation strategies or ethical oversight. Therefore, a comprehensive evaluation of technological innovation must include both empirical analysis of impact and critical engagement with the imaginaries and narratives that frame its societal meaning.

In conclusion, historical and contextual framing highlights how AI's role reflects broader technological revolutions while presenting unique challenges and opportunities. The analysis of these dynamics is critical to understanding contemporary and future situations that are shaping the future of creative fields. The motivation for this thesis is, therefore, driven by the need to critically examine the transformative power of AI in creative disciplines.

1.4. Main Hypothesis and Aims

The central hypothesis of this research is that the advent of artificial intelligence, particularly text-to-image diffusion models (T2I DMs) and large language models (LLMs), is triggering a paradigm shift in art and design. This shift is transforming not only the modes of production for creators but also the processes of reception for audiences. Specifically, these tools have the potential to reshape the creative process by accelerating the speed of production, broadening access to creative tools, and redefining approaches to learning and information processing. Moreover, they have the potential to influence aesthetic values and transform the dynamics of interaction between creators, audiences, and the artworks themselves. This hypothesis encompasses the comprehensive influence of AI in reshaping Art and Design, providing a structured framework to explore its implications across production, perception, and experiential dimensions.

The focal aim of this research is to investigate and critically analyze the perception and impact of artificial intelligence on art and design, focusing on its narrative construction, educational implications, and practice-based reflections. In parallel, the study explores how younger generations perceive and engage with these emerging technologies, acknowledging their role as future professionals.

Notably, the voices of the next generation of artists and designers, those who will inherit and redefine these AI-driven landscapes, remain underrepresented in academic research. Understanding their perceptions, concerns, and aspirations regarding AI's role in their future work is vital for shaping education, tools, and frameworks that support ethical and innovative integration of AI in creative disciplines. Furthermore, while theoretical discourse on AI's influence in art and design is growing, practice-based investigations, such as art exhibitions that directly engage with AI generative tools, are necessary to bridge the gap between conceptual understanding and lived creative experience.

To achieve this, the research is structured around the following specific tasks:

1. Examine AI Narratives in Emerging Technology Media:
    a. Conduct Text Mining and sentiment analysis on a corpus of over 4,500 articles from emerging technology magazines to identify prevailing themes, trends, and attitudes toward AI.
    b. Analyze the emotional tone and framing of AI-related discussions to uncover societal and cultural biases, concerns, and aspirations reflected in these narratives.
    c. Provide a comprehensive understanding of how AI's role in creative fields is constructed and disseminated through popular and professional media. Map how public discourse constructs and disseminates narratives around AI's role
2. Understanding Perceptions Among Art and Design Students for the first 3 years after the appearance of generative AI
    a. Design and administer a survey targeting art and design students to gather data on their awareness, perceptions, and attitudes toward AI in creative practices.
    b. Analyze the collected data to identify trends in how emerging practitioners view the opportunities and challenges posed by AI, as well as its potential influence on their future work.
    c. Use these insights to propose recommendations for integrating AI tools and concepts into art and design education in ways that empower students and address ethical concerns.
3. Produce Art Exhibitions Reflecting on AI's Role in Production and Creativity:
    a. Produce a series of art exhibitions that critically engage with the themes explored in the research, using both traditional and AI generative tools to create artworks.
    b. Use these exhibitions as a form of practice-based research to explore the aesthetic, conceptual, and experiential dimensions of AI's influence in art and design.
    c. Document and analyze audience responses to the exhibitions to further understand the societal impact of AI-generated and AI-reflective art.
4. Bridge Theory, Data, and Practice:
    a. Synthesize findings from narrative analysis, survey data, and practice-based explorations to create an understanding of AI's impact in art and design.

b. Contribute original knowledge to the academic and artistic discourse on AI, highlighting its transformative potential while addressing ethical, cultural, and educational implications.

1.5. Structure

This thesis is structured in five chapters after this introduction. The first two chapters contribute with the theoretical framework and assumptions while the next three chapters contribute a distinct analytical perspective and methodology, cumulatively addressing the research aims and central hypothesis.

Chapter 2 outlines the methodological framework adopted in the study. It presents an interdisciplinary approach that integrates theoretical perspectives from Media and Technology Studies with methodologies drawn from Digital Humanities, empirical survey research, and practice-based artistic inquiry. Each methodological component is discussed in relation to its relevance and application within the broader scope of the research, emphasizing how they collectively support a critical investigation of AI in creative contexts.

Chapter 3 presents a review of the state of the art and relevant literature. This phase situates this research within existing literature and ongoing debates, mapping the history, narratives and current landscape of AI's application in creative fields. It examines key scholarly works, emerging trends, and significant gaps in knowledge. Furthermore, by analyzing how AI is positioned in academic discourse, industry practices, and cultural narratives, this chapter establishes the foundational context for the study and identifies critical questions that will guide the subsequent phases of the research.

The next part examines the portrayal of AI in media through text mining and sentiment analysis in Chapter 4. Over 4,500 articles from leading emerging technology magazines are analyzed to identify key themes, recurring narratives, and prevailing emotional tones surrounding AI tools in art and design. The data collection process involves aggregating articles using automated web scraping tools, ensuring a robust and representative dataset. Text preprocessing techniques are then employed to clean and organize the data, removing noise while preserving meaningful content. Natural language processing (NLP) techniques are applied to detect patterns and topics that highlight how AI is discussed in these contexts. Sentiment analysis tools further classify the emotional tone of the narratives, revealing optimism, skepticism, or neutrality toward AI's role. This analysis provides

critical insights into how media discourse shapes perceptions and expectations around AI in creative fields.

Building on this, the research shifts to a survey of art and design students to explore their attitudes and perceptions regarding AI in Chapter 5. This phase is crucial as it captures the voices of emerging practitioners who will define the future integration of AI in their fields. The survey is meticulously designed with a mix of quantitative and qualitative questions, using formats like Likert scales and multiple-choice options. It is distributed online to ensure accessibility and broad participation from students across diverse disciplines. The collected data is analyzed statistically for quantitative trends and thematically for qualitative insights, offering a nuanced understanding of how students view AI as a tool, a collaborator, or a disruptor in their creative processes. This phase provides an in-depth look at the expectations, concerns, and aspirations of the next generation of creatives.

The practice-based phase of the research focuses on producing art exhibitions that critically engage with AI's role in creativity in Chapter 6. These exhibitions showcase artworks created using both traditional methods and AI generative tools, exploring their aesthetic, conceptual, and experiential dimensions. The process involves the creation of artworks that reflect the opportunities and challenges presented by AI, followed by the curation of exhibitions designed to provoke dialogue and critical engagement. Audience responses are gathered through observation and feedback mechanisms, providing valuable insights into how viewers perceive and interact with AI-generated and AI-reflective works. This practice-based approach bridges theoretical analysis with real-world applications, offering tangible examples of how AI is reshaping creative processes and audience experiences.

Finally, the findings from these phases are synthesized into a comprehensive discussion and conclusion in Chapter 7. By integrating insights from the state-of-the-art review, text mining analysis, student surveys, and practice-based research, the study constructs a multi-dimensional analysis of AI's impact on art and design.

Overall, the structure of the thesis reflects the complexity of the subject matter and aims to contribute original knowledge to academic discourse, inform evolving creative practices, and support the development of educational frameworks responsive to the challenges and opportunities posed by artificial intelligence in creative fields.

2
Methodology

This chapter describes the methodological strategies and theoretical paradigms employed in this doctoral research. The research methodology is structured into four main sections, each addressing a distinct method to the investigation: Digital Media and Technology Studies, Digital Humanities and Text Mining, Social Research and Survey Methodology, and Art, Science, and Technology Studies and Practice-Based Research

2.1. Interdisciplinary approach

The methodology for this research adopts an interdisciplinary approach, combining Digital Media and Technology Theories, quantitative analysis through data-driven examination, quantitative and qualitative insights through survey research, and practice-based research to explore the influence and impact of artificial intelligence (AI) in Art and Design. The methodology of this research is designed to offer a thorough exploration of the topic. It is structured into distinct phases, each contributing a unique perspective to the study, and together they build a cohesive understanding of the transformative impact of AI in the creative domain. By integrating these approaches, the study aims to provide a comprehensive

understanding of how AI is reshaping the creative landscape across narrative, perceptual, and practical dimensions.

Grounded in an interdisciplinary framework, the research draws on New Media and Technology Studies to provide a cohesive theoretical background across the entire work. These paradigms offer critical lenses through which AI is examined not merely as a technological tool, but as a cultural, aesthetic, and epistemic force. The selection of methods and theoretical frameworks varies across the different phases of the study; each adapted to a specific aspect of investigation presented in the respective chapters.

Digital Humanities and Text Mining methods proved particularly valuable for the investigation presented in Chapter 4, where computational techniques were used to analyze sentiment and discourse within mass media narratives around AI. Chapter 5 adopts survey methodology as both a theoretical and practical framework, drawing from social research traditions to design and implement a longitudinal survey exploring students' perceptions of AI in creative education. Meanwhile, Chapter 6 incorporates methodological perspectives from Art, Science, and Technology Studies (ASTS) and Practice-Based Research to present the artistic contributions of this thesis and the dissemination of knowledge concerning AI within the field of art. These methodologies foreground creative practice not only as an object of study but as a legitimate mode of knowledge production. Through this layered and integrative approach, the thesis practices a pluralistic research design that reflects the complexity and interdisciplinarity of its subject matter.

2.2. Digital Media and Technology Methodologies

This PhD thesis is embedded in the theoretical frameworks of Digital Media and Technology Studies, drawing from foundational works that explore the interplay between technology, media, culture, and society. By engaging with seminal theories from key thinkers, the research situates itself within a multidisciplinary dialogue that critically examines the role of Artificial Intelligence (AI) as both a technological and cultural phenomenon. While this section offers a concise overview of the paradigms that have shaped the research trajectory, an in-depth analysis and critical engagement with these sources is provided in the following chapters.

The perspective, that emerges from the field of Digital Media and Technology Studies, provides a lens through which the cultural, epistemological, and aesthetic implications of AI can be examined. Among the key theoretical contributions, Marshall McLuhan's (McLuhan, 1994) conceptualization of media as extensions of human sensory capabilities has proven especially pertinent. McLuhan's assertions allow AI to be interpreted not merely as a tool or channel for content delivery but as a transformative medium that reshapes human cognition, creativity, and social organization. This view supports the methodological focus on AI's impact not only at the level of production but also in its capacity to alter the very structure of creative processes.

Building upon this, Régis Debray's *mediological* theory extends the analytical scope from media content to the infrastructures and institutions that mediate cultural forms (Debray, Media manifestos: on the technological transmission of cultural forms , 1996) (Debray, Transmitting culture, 2000). Debray's approach is particularly relevant for understanding how generative AI systems, such as GPTs and Text-to-Image Generators, function as cultural technologies that actively reshape the production and reception of artistic content. His emphasis on the materiality of media and the long-term transmission of symbolic forms foregrounds AI not just as a technical innovation, but as part of a larger socio-technical continuum that transforms authorship, aesthetic values, and creative labor. These insights have placed methodological emphasis on examining AI both as a creative apparatus and as a mediating infrastructure.

In parallel, Bruno Latour's Actor-Network Theory (ANT) offers a compelling framework for analyzing the distribution of agency of AI systems within creative networks (Latour, 2007). ANT allows for the conceptualization of generative AI as a non-human actant, one that participates actively in shaping outcomes alongside human agents. Rather than privileging human intention alone, this approach situates AI within a network of actors - developers, users, datasets, and institutions - that co-produce meaning and artistic value. This perspective has been crucial in informing the methodological design of practice-based and survey-based inquiries that examine how artists and students interact with AI tools in situated contexts.

Moreover, it is important to include the work of Joanna Zylinska which has significantly shaped the study's engagement with posthumanist and ecological paradigms (Zylinska, 2017). Zylinska's theorization of processes as distributed

beyond the human perspective explores how technologies and nonhuman processes contribute to the creation and perception of visual artifacts. It, therefore, offers a valuable perspective through which AI-generated art can be understood as a hybrid form of production. Her critique of anthropocentric authorship and her call for more sustainable, ethically engaged creative practices underscore the importance of evaluating AI not only as a technological innovation but also as an environmental actor. This orientation complements the methodological incorporation of artistic practice and dissemination as modes of knowledge production.

Ed Finn enriches this theoretical foundation by interrogating the cultural narratives embedded within computational systems (Finn, 2018). Finn's work positions algorithms as socio-cultural agents that shape imagination, behavior, and aesthetic expectations. His attention to the performance of algorithms and their mythic status in contemporary culture has informed the interpretative frameworks used in analyzing survey responses and media discourses about AI. These ideas align with the research's aim to interrogate how generative systems participate in storytelling, norm-setting, and the redefinition of creativity.

Finally, Lev Manovich's theory of *AI aesthetics* contributes a vital perspective on the transformations in artistic practice and visual culture prompted by generative AI (Manovich L. , 2018). Manovich emphasizes the role of data and computation in shaping new aesthetic regimes, while also foregrounding the tensions between democratization and homogenization in algorithmically mediated creativity. His conceptualization of AI as both a tool and a collaborator has directly influenced the practice-based components of this research, particularly in Chapter 6, where the production and dissemination of AI-generated art is examined as a methodological and epistemological effort.

Together, these frameworks do not merely provide background theory but actively structure the inquiry and interpretation across the dissertation. By foregrounding the mesh of human and nonhuman agency, the material and symbolic dimensions of media, and the evolving conceptions of aesthetics and authorship, these paradigms support a methodological approach that is both critical and reflexive. Their integration into the research design enables an exploration of AI's role in contemporary creative practice, while also explaining the broader socio-technical dynamics in which these transformations are embedded.

2.3. Digital Humanities and Text Mining

The field of Digital Humanities (DH) represents the intersection of computing technologies and traditional humanities disciplines, encompassing fields such as art, history, literature, linguistics, and philosophy. By leveraging digital tools and methodologies, researchers can analyze texts, visualize data, and explore cultural expressions in new and innovative ways.

Historically, the roots of Digital Humanities can be traced back to the 1940s and 1950s, when Jesuit scholar Roberto Busa collaborated with IBM to create the Index Thomisticus, a computational analysis of the works of Thomas Aquinas (Busa, 1980). This project is often regarded as one of the first instances of humanities computing. Over the decades, the field expanded with the advent of databases, hypertext, and, more recently, artificial intelligence and machine learning. In the 21st century, the field has evolved into a vibrant and interdisciplinary domain. As Matthew K. Gold and Lauren F. Klein argue in Debates in the Digital Humanities (2016), *Digital Humanities is not simply the application of computational tools to humanities research but a field that critically interrogates the digital itself, exploring how digital methods shape our understanding of culture and knowledge* (Klein, 2016).

A key approach within DH is Digital Methods, which emphasizes the use of native digital tools - such as web-based analytics, hyperlink analysis, and social media studies - to study contemporary culture (Rogers R. , Digital methods for cross-platform analysis, 2017). Instead of merely digitizing traditional research methods, Rogers proposes that scholars should engage with the *natively digital* environment to develop new forms of inquiry. Similarly, the concept of Cultural Analytics introduces large-scale computational analysis to examine cultural patterns in visual media, texts, and online content (Manovich L. , Cultural analytics, 2020). This work demonstrates how quantitative approaches, including data visualization and artificial intelligence, can be used to interpret massive digital archives, from historical paintings to Instagram images. Today, Digital Humanities projects range from digital archives and Text Mining to GIS mapping of historical events and virtual reality reconstructions of ancient sites. As technology continues to evolve, DH provides essential frameworks for addressing questions about digital culture, authorship, accessibility, and the preservation of cultural heritage in the digital age.

In this thesis a technique often employed in Digital Humanities – such as Text Mining – was employed in order to extract the mean sentiment expressed in mass media technology magazines. Text Mining, or text analytics, involves using computational methods to analyze unstructured text and uncover meaningful insights and patterns. It combines methods from natural language processing (NLP), machine learning, and statistics to analyze large corpora of text. The growing availability of digital texts, ranging from literature and historical documents to social media and news articles, has led to the widespread adoption of Text Mining in fields such as the humanities, social sciences, and business intelligence. The origins of Text Mining can be traced back to computational linguistics and information retrieval research in the mid-20th century. Early efforts in automated text analysis emerged in the 1950s and 1960s, including the development of keyword-based indexing systems and machine translation (Luhn, 1958). A significant milestone was the creation of the Vector Space Model (Salton, 1975), which became the foundation for modern search engines and information retrieval systems. In the 1980s and 1990s, advancements in natural language processing (NLP) led to more sophisticated approaches to Text Mining, such as Latent Semantic Analysis (LSA) and Named Entity Recognition (NER). The advent of machine learning in the 2000s further transformed the field, with techniques like topic modeling (Blei, 2003) and deep learning-based text analysis gaining traction. Therefore, Text Mining has evolved from simple keyword-based retrieval to sophisticated machine learning and NLP-driven analysis. Today, Text Mining is an essential tool in disciplines ranging from digital humanities to computational social science, where researchers analyze everything from historical texts to contemporary media discourse.

With tools like R, researchers can efficiently preprocess, analyze, and visualize textual data for insights into language, sentiment, and topics. As computational power and algorithms continue to improve, Text Mining will play an increasingly significant role in digital humanities and social sciences research. R has become one of the most prominent programming languages for Text Mining due to its extensive array of packages dedicated to textual data processing, analysis, and visualization. Its versatility is particularly evident where tasks such as text preprocessing, term frequency analysis, topic modeling, and network analysis are essential. Term frequency analysis quantifies the occurrence of words to highlight dominant themes, while topic modeling is a statistical method that uncovers latent themes by clustering frequently co-occurring words, and network analysis examines the interrelationships between words to reveal semantic connections.

A key textbook employed in this part of the research has been *Text Mining with R: A tidy approach* (Silge, 2017) which not only organizes these processes but also enhances reproducibility and clarity in the analysis of large text corpora. At its core, Text Mining involves transforming raw, unstructured text into a structured format that can be easily analyzed. R facilitates this transformation through powerful packages like *tm* and *tidytext*, which support operations such as tokenization, stemming, lemmatization, and the removal of stopwords. These initial preprocessing steps are critical, as they prepare the text for deeper analysis by refining it into its most meaningful components.

A key analytical technique within Text Mining is Sentiment Analysis, which seeks to quantify the emotional tone conveyed by a body of text. This method is particularly useful when handling large volumes of data, where manual interpretation would be unfeasible. In R, Sentiment Analysis is commonly performed by associating words with pre-determined sentiment scores provided by lexicons. Two widely recognized dictionaries in this area are AFINN (Nielsen, 2011) and VADER (Valence Aware Dictionary and sEntiment Reasoner) (Hutto, 2014). The AFINN dictionary assigns numerical values to words based on their positive or negative sentiment, allowing researchers to compute aggregate sentiment scores across entire documents or datasets. On the other hand, VADER is specifically designed to capture sentiment nuances in media texts, accounting not only for polarity but also for the intensity of sentiments. Both lexicons enable a systematic approach to sentiment analysis, providing a framework for quantifying and comparing emotional expressions within textual data.

Overall, the combination of R's robust analytical environment and specialized sentiment analysis tools such as AFINN and VADER underscores the language's efficacy in converting vast and complex text datasets into understandable information.

2.4. Survey methodology

Survey methodology is one of the most widely utilized strategies in social research, particularly valued for its ability to systematically collect data from large groups and to explore both factual and perceptual dimensions of social phenomena.

Within the framework of empirical inquiry, surveys serve as a methodological bridge between abstract theoretical concepts and observable data.

This section provides an overview of survey research methodology articulated by Piergiorgio Corbetta's *Social Research: Theory, Methods and Techniques* (Corbetta, 2003) and John W. Creswell's *Research design: Qualitative, quantitative, and mixed methods approaches* (Creswell, 2014), emphasizing both foundational theory and application. The discussion begins by outlining the theoretical foundations of survey research and proceeds to examine how the method can be employed within quantitative, qualitative, and mixed-methods paradigms. The final part reflects on how these principles informed the design of a longitudinal survey investigating students' perceptions of AI in the context of creative education from 2023 to 2025.

According to Corbetta, survey research is characterized by the systematic collection of standardized information from a sample of individuals, usually via structured questionnaires (Corbetta, 2003). This method allows researchers to measure attitudes, opinions, and behaviors across diverse populations with a high degree of comparability. Standardization, where each respondent is presented with the same set of stimuli, is central to survey design, ensuring that differences in responses are attributable to differences among respondents, not inconsistencies in the data collection process.

Creswell complements this view by situating survey methodology within broader research designs. He asserts that surveys can serve both as primary tools in quantitative analysis and as embedded instruments in qualitative and mixed-methods research. Creswell underscores that a researcher's philosophical stance - postpositivist, constructivist, or pragmatic - shapes both methodological choices and data interpretation. Postpositivists use statistical analyses to identify variable correlations, while constructivists prioritize participant narratives to explore subjective experiences. Pragmatists integrate both quantitative and qualitative data to address practical objectives, such as advocating for technological literacy in Art and Design curricula. Within the quantitative paradigm, survey research centers on measurement, involving hypothesis formulation, variable manipulation, and numerical data collection to examine relationships or trends. Therefore, structured, closed-ended questions - such as those using Likert scales - are the norm, enabling statistical analysis and generalization (Creswell, 2014). It should be noted that these

types of questions are advantageous because they are easy to administer, produce data that are readily quantifiable, and allow for the use of inferential statistics. However, quantitative surveys are not without limitations. Their reliance on pre-coded responses can oversimplify complex attitudes and constrain the respondent's ability to elaborate (Corbetta, 2003).

Qualitative surveys adopt a more flexible and exploratory stance. Instead of testing hypotheses, they aim to capture the richness of individual perspectives, often through open-ended questions. Qualitative surveys give priority to the making of the meaning over measurement, allowing respondents to articulate their thoughts in their own words (Corbetta, 2003). This approach is particularly useful when researching emerging or poorly understood phenomena, where predefined categories might fail to capture the full scope of the subject. On the other hand, qualitative surveys could be positioned within a constructivist epistemology, where knowledge is co-constructed through interaction between researcher and participant. This aspect underscores the importance of context, interpretation, and reflexivity (Creswell, 2014). Qualitative surveys also face challenges: they are time-intensive to analyze, may be more susceptible to researcher bias, and typically offer limited generalizability due to smaller samples.

In response to the strengths and weaknesses of both traditions, mixed-methods research has gained prominence as a third paradigm. Creswell defines mixed methods as the integration of quantitative and qualitative data within a single study to obtain a more comprehensive understanding of the research problem (Creswell, 2014). This approach is particularly well-suited to complex or multi-dimensional topics where numerical data provide breadth and textual data offer depth. Corbetta acknowledges the increasing methodological pluralism in contemporary social research and suggests that combining different techniques can enhance both the explanatory power and interpretive nuance of a study. In survey research, this often involves combining closed-ended questions with one or more open-ended items, enabling triangulation and the emergence of unexpected themes (Corbetta, 2003). Despite its advantages, mixed-methods research requires careful planning to ensure methodological coherence. Researchers must attend to issues of integration, how different forms of data relate to one another, and maintain consistency between research questions, design, and analysis.

These methodological insights were applied to design of a longitudinal online survey conducted between 2023 and 2025. Designing a survey for art and design students requires careful consideration of question types, wording, and sequence. The starting point is the defining of clear objectives. In this research the goal was to explore and measure perceptions of AI, attitudes, beliefs, and impact of AI, experiences and expected effects on creative work of university students in creative fields. With these types of goals, researchers typically use mixed-methods study. In recognition of the complexity and novelty of the subject, we adopted a predominantly quantitative structure supplemented by a qualitative component. The survey included several Likert-scale questions to measure attitudes toward AI's usefulness, ethical implications, and creative potential. One open-ended question was incorporated to allow students to share concerns, hopes, or experiences not anticipated in the structured items. This decision was based on Creswell's recommendation to incorporate qualitative items when investigating emergent or evolving social phenomena (Creswell, 2014).

Moreover, we prioritized accessibility and brevity. Questions were formulated in straightforward language to ensure comprehension across a diverse student population. The survey was designed to be completed in approximately ten to fifteen minutes, balancing the need for data richness with the importance of maintaining respondent engagement, a point highlighted by Corbetta in his discussion of minimizing response fatigue (Corbetta, 2003). The decision to administer online computer-based surveys was both pragmatic and strategic. This type of distribution maximized reach, minimized costs, and facilitated the collection of data across different time points. This format also aligned with students' digital habits and ensured convenience, thereby increasing the likelihood of participation.

In conclusion, this survey methodology offers a flexible and powerful means of investigating social attitudes, behaviors, and perceptions. Surveys can be employed across quantitative, qualitative, and mixed-methods frameworks depending on the research objectives and epistemological stance. Each approach brings unique strengths and limitations, and selection among them should be guided by the nature of the study and the characteristics of the target population. In the context of understanding students' perceptions of AI in creative education, the integration of both structured and open-ended questions within an accessible online format proved methodologically appropriate.

2.5. ASTS and Practice-based methodologies

Finally, the methodologies adopted during artistic practice-based research are presented in this thesis. In this context, the framework of Art, Science, and Technology Studies (ASTS) proves particularly relevant, as it integrates epistemological pluralism with transdisciplinary practice (Rogers H. S., 2022). This approach enables symmetrical engagement with both artistic and scientific forms of knowledge production, thereby aligning with the reflexive and exploratory nature of creative research.

ASTS emerges at the intersection of Science and Technology Studies (STS) and artistic research, treating both Art, Science and Technologies as knowledge-producing systems embedded in sociopolitical and cultural contexts (Rogers H. S.-V., 2021). ASTS adopts a symmetrical approach to the epistemologies of art and science. It challenges the dominance of scientific methods by incorporating art practices not merely as illustrations or tools of communication, but as legitimate epistemic practices.

Central to ASTS is the incorporation of well-established methodologies from Science and Technology Studies (STS) and embraces artistic research practice. These include performance-based inquiry, art and curatorial interventions, and hybrid studio-laboratory collaborations, which not only serve as modes of artistic expression but also function as vehicles for critical reflection and the generation of novel forms of knowledge. Such practices position the act of making as integral to the research process, thereby challenging traditional dichotomies between theory and practice. These methods also enable researchers to engage with the situated practices, historical trajectories, and social dynamics of scientific and artistic knowledge production. In the artistic practice undertaken in this thesis, these methodologies were employed to develop installations and performative experiments that critically examined AI tools and its technological infrastructures.

Moreover, ASTS is characterized by its deployment of critical and reflexive methodologies that interrogate the processes of power, categorization, and legitimation within systems of knowledge. This reflexivity foregrounds the contingent and constructed nature of epistemic authority and disciplinary boundaries, inviting scholars to question the assumptions underlying dominant scientific and artistic paradigms. In the context of this thesis, reflexive methods

were applied to investigate how institutional frameworks and epistemic conventions shape technological narratives within creative domains art, enabling practice to function both as a critique and a reconfiguration of dominant modes of knowing.

Finally, poetic and participatory methodologies are central to the ASTS approach (Burri, 2021). These methods emphasize engagement with materiality, metaphor, and embodiment as means of producing situated and affectively resonant insights. By facilitating co-creation and experiential knowledge, such approaches expand the epistemic repertoire of ASTS and foster inclusive dialogues across disciplinary, institutional, and public spheres. The artistic practice developed in this research integrated poetic and participatory strategies to foster collaborative encounters to create effectively charged experiences.

The methodological framework of ASTS offers a critical lens through which generative AI can be studied not merely as a technological advancement, but as part of a broader sociotechnical system shaped by cultural imaginaries, aesthetic norms, and political economies. Rather than privileging engineering narratives, ASTS emphasizes a symmetrical approach to knowledge, treating scientific and artistic practices as equally productive in shaping the meanings and impacts of AI. Within this thesis, this perspective has been central to artistic practice, where generative AI is not only employed as a tool but examined through its aesthetic and conceptual implications in installation and performance works.

Material-semiotic analysis, particularly from actor-network theory (ANT), informs this research by tracing the entanglements of datasets, algorithms, interfaces, artworks, and publics in the co-construction of values and epistemic authority around AI. In the context of this thesis, artistic installations have been conceived as critical sites where such assemblages are rendered visible and open to public engagement, thereby functioning as both aesthetic expressions and epistemological interventions.

Participatory and affective methodologies further ground this research, prioritizing the embodied, sensory, and ethical dimensions of engaging with AI. Through collaborative and interactive formats, the artistic practice developed here invites audiences to experience and reflect on the implications of AI systems, making perceptible the affective and experiential knowledge often excluded from

formal discourses. These methodologies have enabled the creation of spaces that provoke dialogue and reflexivity, central aims of the practice.

ASTS also provides tools for cultural critique by destabilizing binary categories such as human/machine, creator/tool, and art/technology. These conceptual disruptions resonate with posthumanist and technocultural debates on authorship and agency. The artistic research undertaken in this thesis leverages these insights to challenge dominant narratives about AI, revealing their constructed nature and proposing more pluralistic understandings of creativity and intelligence.

Aligned with ASTS, practice-based research (PBR) underpins the methodological structure of this thesis. Here, artistic production functions both as a method and output, generating knowledge through the creation, exhibition, and reflection on artefacts. This approach legitimizes experiential and embodied forms of knowing, which are embedded in the material processes and public reception of the work. Accordingly, documentation and critical contextualization are used to ensure the transparency and academic rigor of the research.

The artistic researcher in this project assumes three interdependent roles: cultivating artistic and conceptual expertise, contributing to academic discourse through theoretical articulation, and engaging with wider publics through performative and participatory encounters. These responsibilities reflect a dialogic and socially embedded research model, one that aligns with the epistemic commitments of both ASTS and practice-based research, and which is foundational to the methodological approach of this thesis.

3
State of the Art

This chapter offers an overview of the current state of the art related to several key themes examined throughout this thesis. It is structured into five main sections. The first section explores the conceptual challenges associated with defining the field of artificial intelligence, a discussion that is closely linked to the diverse narratives, which are examined in the second section. The third section provides a historical overview of artificial intelligence, with a particular focus on developments in the twenty-first century, highlighting the principal milestones that have shaped its evolution. The fourth section investigates the applications of artificial intelligence within the creative industries. Finally, the fifth section presents a more in-depth analysis of the media and technology theories, as well as the digital humanities, which support the discussions in the subsequent chapters.

3.1. Definition of AI

Artificial Intelligence (AI) in the broader sense is the *science and engineering of making intelligent machines, especially intelligent computer programs* (McCarthy J. , From here to human-level AI, 2007). It is distinct from the study of human intelligence, as it does not need to replicate biologically observable processes. Intelligence, in this context, is defined as the computational part of the ability to

achieve goals in the world (McCarthy J. , From here to human-level AI, 2007). This broad definition acknowledges that various degrees and types of intelligence exist in people, animals, and machines. However, despite its centrality to the field, there is no single, universally accepted definition of intelligence, since it is a broad and evolving concept (Bhatnagar, 2018). Scholars frequently debate the boundaries and characteristics of intelligence, especially when applied to machines. This ambiguity is strongly reflected in the field of AI, where terms like *thinking*, *understanding*, and *intelligence* are often used inconsistently (Bory, 2024).

This definitional ambiguity extends to AI itself, where researchers have yet to fully characterize the range of computational processes that might qualify as intelligent (Wang P. , 2019). The absence of a unified definition reflects the field's inherent complexity, rapid technological development, and interdisciplinary nature. As a result, conceptualizing AI involves navigating a diverse array of interpretations, shaped by differing disciplinary paradigms and interests, including those of computer scientists, philosophers, and industry practitioners, offering varying perspectives. Therefore, it is worth observing that the notion of AI has changed over time. It often reflects advancements in technology and shifting cultural contexts.

An additional and critical distinction within the discourse on Artificial Intelligence (AI) lies between Artificial General Intelligence (AGI) (Goertzel, Artificial general intelligence, 2007) (Goertzel, 2014) and Artificial Narrow Intelligence (ANI) (Kurzweil, 2005). AGI, often referred to as *Strong AI* (Searle, 1980), denotes the hypothetical form of machine intelligence that possesses the capacity to understand or learn any intellectual task that a human being can perform. In contrast, ANI, also known as *Weak AI* (Searle, 1980), is a form of machine intelligence engineered to execute specific functions, such as language translation or image recognition, without exhibiting consciousness or genuine understanding. In the case of ANI, the machine's responses are primarily based on probabilistic reasoning. In essence, it operates by making highly sophisticated *guesses* based on statistical models and patterns, rather than any form of true comprehension.

This distinction is not merely technical; it is epistemological consequences, engaging with deeper philosophical analyses into the nature of intelligence, consciousness, and agency. As the field of AI continues to evolve, these conceptual demarcations remain at the heart of ongoing debates concerning the technology's

future trajectory and ethical implications. At the present historical juncture, the development of AGI remains a distant goal. Nevertheless, recognizing and maintaining this distinction is essential for the purposes of this thesis. The differentiation between AGI and ANI plays a fundamental role in shaping the narratives surrounding AI, which will be addressed in the next section. In particular, public discourse often blurs the line between the two, leading to misconceptions about what current AI systems can actually achieve. This confusion significantly influences public perceptions and expectations, and as such, forms a critical aspect of the cultural and discursive landscape that this study seeks to investigate.

3.2. Narratives

The conceptual distinction between *Strong AI* and *Weak AI*, made in the previous section, has given rise to divergent narratives that significantly influence public perception, media discourse, and even policy debates surrounding artificial intelligence. *Strong AI* is typically aligned with science fiction and futurist imaginaries. It refers to machines capable of exhibiting human-like consciousness, general reasoning, and cognitive versatility across a wide range of tasks, capacities that rival or surpass human intelligence. These representations are commonly featured in speculative fiction and techno-utopian visions, which envision scenarios involving self-aware machines, the emergence of superintelligence, or the so-called technological singularity, a hypothetical future moment when machine intelligence will exceed human intelligence and precipitate transformative societal changes (Kurzweil, 2005). While these portrayals capture the cultural imagination and provoke philosophical reflection on the boundaries of mind and machine, they remain largely theoretical and disconnected from the current state of technological development (Bostrom, 2014) (Turing, 2009). Nevertheless, they are frequently associated with dystopian and apocalyptic representations of AI, often depicting technology as a potential existential threat to humanity. These narratives, prevalent in popular media and speculative fiction, could contribute to a climate of fear and uncertainty. Furthermore, they could be shaping public anxieties about the future of intelligent machines and their role in society.

In contrast, *Weak AI* refers to systems designed to perform specific, well-defined tasks without any claim to consciousness or general intelligence. These systems include language models, image recognition software, recommendation

algorithms, autonomous vehicles and text-to-image generators. Despite the weak designation, these technologies have had a profound impact on contemporary society (Nestor Maslej L. F., 2024), see Figure 3-1. Therefore, the debate surrounding *Weak AI* is grounded in practical concerns, focusing on its implementation, governance, and ethical ramifications. Issues such as algorithmic bias, surveillance, data privacy, accountability, and the opacity of machine learning systems are central to ongoing debates in this area. Furthermore, as AI systems become increasingly embedded in everyday life, questions of social justice, regulatory oversight, and digital inequality have emerged as urgent topics for interdisciplinary research.

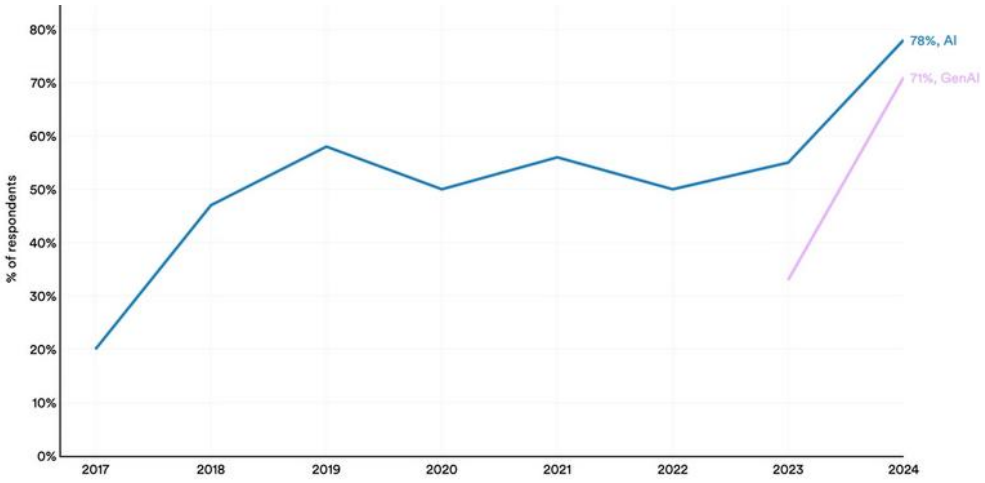

Figure 3-1 Use of AI. Source: (Nestor Maslej, 2024)

Importantly, the dichotomy between the narratives is not only a matter of capabilities but also a discursive and ideological construct. Popular media and public discourse often combine the two, leading to widespread confusion about what current AI technologies can and cannot do. This combination can result in either inflated expectations or misplaced fears, both of which complicate efforts to regulate AI responsibly. For instance, the anthropomorphisation of AI, particularly in the context of Large Language Models (LLMs), can lead users to attribute agency or intentionality to systems that merely operate on statistical correlations (Kronemann, 2023). As a result, the societal narratives surrounding AI are not

merely reflections of technological development. But they shape the way these systems are perceived.

This thesis is primarily concerned with LLMs and generative AI technologies, which are emblematic examples of *Weak AI*. Nevertheless, given the connection between public imaginaries and technological discourses, perspectives associated with *Strong AI* cannot be dismissed. Therefore, in order to offer a comprehensive and critically engaged analysis, this study will address both dimensions, *Weak and Strong AI*.

3.3. History of AI

The journey of AI began long before the advent of powerful tools like T2I generators and LLMs. The origin and history of artificial AI encompass a dynamic evolution of concepts and technologies aimed at replicating human cognitive processes. Rooted in both philosophical inquiry and scientific curiosity, AI has evolved through distinct eras, each marked by significant advancements that have shaped its development.

The idea of artificial entities capable of copying human thought dates to antiquity. Tracing back to ancient philosophical inquiries, early thinkers such as Aristotle explored the nature of intelligence and logic in *Prior Analytics* and *Posterior Analytics* (Smith, 1989) (Odifreddi, 2017). These works laid foundational ideas that would later influence the development of mechanical reasoning systems (Barnes, 2014). Ancient Greek myths, such as *Hephaestus's automata*, and medieval mechanical constructs exemplify humanity's early fascination with creating *thinking* machines. Philosophers like Descartes and Leibniz speculated about the nature of intelligence and whether it could be reduced to logical rules or mechanical processes, laying the groundwork for later formalizations (Descartes, 2005) (Leibniz, 1991).

The conventional study of AI emerged in the mid-20th century. Alan Turing's seminal paper, *Computing Machinery and Intelligence* from 1950 (Turing, 2009), posed the question "Can machines think?" and introduced the Turing Test as a method for evaluating a machine's intelligence. In 1956, the term *Artificial Intelligence* was coined at the Dartmouth Conference, where researchers like John

McCarthy, Marvin Minsky, and Allen Newell sought to define the field (McCarthy J. M., 2006). This period witnessed the creation of pioneering programs, including Logic Theorist, which demonstrated the potential of machines to use rule-based systems for performing tasks typically associated with human reasoning (Newell, 1956). These programs could solve logical problems and even play chess. Throughout the late 20th century, AI evolved through significant milestones, such as the emergence of expert systems in the 1970s, which aimed to simulate human decision-making in specific domains, exemplified by Stanford's MYCIN project for diagnosing bacterial infection (Van Melle, 1978).

After these early achievements, AI experienced cycles of elevated expectations followed by significant disillusionment during what came to be known as the AI winters (Wooldridge, 2021). These periods were marked by a sharp decline in funding, research activity, and public interest, largely due to the failure of AI technologies to deliver on overly ambitious promises. Researchers struggled to overcome limitations in computational power, which restricted the ability to handle complex tasks, and data availability, which hindered progress in developing learning-based approaches. Additionally, the lack of advanced algorithms capable of solving real-world problems further contributed to the stagnation. These challenges collectively stalled the progress of AI, confining its development to niche applications and academic circles during these periods (Nilsson, 2009).

However, the 1980s and 1990s accompanied in a resurgence of interest with the reintroduction of Machine Learning approach, in particular with Artificial Neural Networks (ANNs), the advent of backpropagation algorithms (Rumelhart, 1986) and advancements in computing power. These aspects enable complex tasks to be tackled like improved pattern recognition and learning capabilities.

The concept of Neural Networks (NNs) was originally introduced in the seminal paper *A Logical Calculus of the Ideas Immanent in Nervous Activity* by Warren S. McCulloch and Walter Pitts, published in 1943 in the *Bulletin of Mathematical Biophysics*. In this work, McCulloch and Pitts proposed a mathematical model of neural activity, representing neurons as simple binary units that could be combined to perform logical operations (McCulloch, 1943) as shown in Figure 3-2. This foundational model provided the basis for the development of Artificial Neural Networks (ANNs) and had a profound impact on the fields of computational neuroscience and artificial intelligence. However, its progress at the time was

delayed by significant limitations. Early neural network models were constrained by the technological landscape, as the computational resources required to train even small networks were far beyond what was available in the mid-20th century. Hardware limitations also prevented the development of more complex models capable of processing large datasets or tackling real-world tasks. Additionally, researchers lacked effective methods for training multi-layer networks. The absence of algorithms like backpropagation made it particularly challenging to optimize weights in deeper architectures, restricting neural networks to single-layer perceptron. These challenges significantly limited their practical applications and slowed the advancement of neural network research during this period (Wooldridge, 2021).

The renewed interest in NNs can be traced back to several landmark academic contributions that addressed key limitations and unlocked their potential. One of the most transformative breakthroughs was the introduction of the backpropagation algorithm in the 1986 (Rumelhart, 1986). This algorithm enabled efficient training of multi-layer neural networks by systematically adjusting weights based on errors propagated backward through the network. By addressing the challenge of optimizing deeper architecture, backpropagation revitalized research in neural networks and established them as a viable tool for complex tasks.

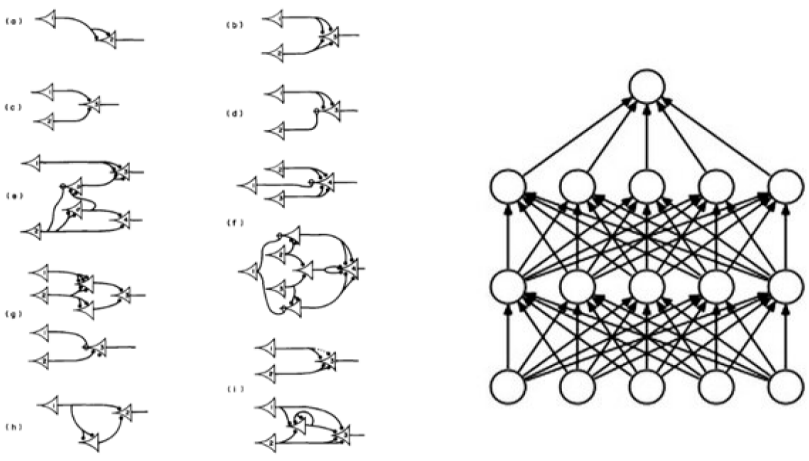

Figure 3-2 On left an early representation of NNs. Source: (McCulloch, 1943). On the right a more modern representation of NNs. Source: (Ikasari, 2016).

Furthermore, theoretical progress also played a significant role in reigniting interest in NNs. The Universal Approximation Theorem showed that neural networks could approximate any continuous function under certain conditions (Cybenko, 1898). This theoretical assurance underscored the broad applicability of neural networks and provided a solid foundation for their future development.

Finally, in 1998, Yann LeCun and colleagues demonstrated the practical applications of neural networks. This work introduced convolutional neural networks (CNNs), a specialized type of artificial neural network designed to process and analyze structured grid-like data, such as images. A Convolutional Neural Network (CNN) is particularly well-suited for tasks involving spatial hierarchies and patterns, such as image recognition, object detection, and video analysis. CNNs are inspired by the organization of the visual cortex in the human brain and rely on a series of mathematical operations called convolutions to extract meaningful features from input data. The LeNet-5, one of the earliest and most influential convolutional neural network (CNN) architectures, excelled at recognizing handwritten digits (LeCun Y. L., 1998). This advancement highlighted the real-world utility of neural networks, proving their effectiveness in tasks requiring high accuracy and robust pattern recognition.

Together, these crucial contributions not only addressed longstanding challenges but also displayed the practical and theoretical potential of neural networks. This resurgence of interest laid the groundwork for the sophisticated AI systems we see today, driving innovation across diverse fields and applications.

To gain a comprehensive understanding of AI, it is essential to first explore the foundational elements it relies on: Symbolic AI, Machine Learning (ML) Deep Learning (DL), and Big Data. AI encompasses a wide range of approaches to building intelligent systems, two of the most prominent being Symbolic AI and Machine Learning (ML). These paradigms differ fundamentally in their methodologies, assumptions and areas of application, reflecting the evolution of AI over decades (Bhuyan, 2025).

Symbolic AI, also known as rule-based AI, was the dominant approach in the early days of AI research, spanning from the 1950s to the 1980s. This paradigm was built on the belief that intelligence could be explicitly represented through symbols and logical rules. Therefore, Symbolic AI systems process information and make

decisions using these sets of predefined rules and logic. These systems rely heavily on if-then rules, decision trees, or logic-based reasoning to emulate intelligent behavior (Nilsson, 2009). For example, an expert system designed for medical diagnosis would use a structured knowledge base of symptoms, diseases, and rules to infer potential diagnoses, simulating the decision-making process of a human expert. The strengths of Symbolic AI lie in its transparency and interpretability. The reasoning process can be traced step-by-step, making it easier to debug and validate compared to more opaque AI systems. Additionally, Symbolic AI systems require minimal data since they depend on human expertise to define rules, making them particularly effective in structured and well-defined environments such as scheduling systems or automated theorem proving (Bhuyan, 2025). However, Symbolic AI faced significant limitations. Its **i**nflexibility made it inappropriate for dynamic or unpredictable scenarios, as the systems struggled to adapt to new situations outside the predefined rules. Furthermore, as the complexity of a problem increased, the number of rules required became unmanageable, leading to scalability issues. Most critically, Symbolic AI systems could not learn from experience; they relied entirely on pre-programmed knowledge, lacking the ability to improve over time (Wooldridge, 2021).

Machine Learning introduced a fundamentally different approach to AI. Unlike Symbolic AI, ML systems do not rely on predefined rules. This means that computers learn to solve problems without being explicitly programmed (Koza, 1996). Instead, they learn patterns and relationships directly from data, allowing them to make predictions or decisions autonomously. ML systems operate by training models on datasets using algorithms that adapt based on the input data (IBM, 2025). For example, a spam detection system analyzes patterns in email content to classify messages as spam or not spam. Over time, as the system is exposed to more data, it refines its performance and adapts to new patterns. One of the strong points of ML is its adaptability. Unlike rule-based systems, ML can adjust to changing data and improve its accuracy with additional training. It is also highly scalable, capable of tackling complex, high-dimensional problems such as image recognition and natural language processing (Kühl, 2022). Additionally, ML systems exhibit generalization, meaning they can uncover patterns and make predictions without relying on explicitly programmed rules (UC Berkeley, 2025). Despite its transformative potential, ML has its own limitations. It is heavily data-dependent, requiring large amounts of high-quality data to train effectively (Joshi, 2020). The decision-making process in ML models, especially in deep learning, is often considered a black box, making it less interpretable compared to Symbolic AI.

Furthermore, ML models can inherit biases from their training data, leading to inaccuracies or unfair outcomes if the data is incomplete or biased (Whittaker, 2018).

The evolution of Machine Learning is deeply connected with the rise of Big Data, which provides the vast quantities of information necessary for training complex models, and with the development of Deep Learning (DL), a subfield of ML. The exponential growth in computing power, coupled with the advent of the World Wide Web, has enabled the generation and collection of massive datasets, commonly referred to as big data. These datasets encompass a staggering variety and volume of information, including trillions of words in text, billions of images, countless hours of speech and video, as well as extensive genomic data, vehicle tracking records, clickstream analytics, social media interactions, and more (Russell, 2016).

The 21st century witnessed a revolution in AI with the rise of Deep Learning (DL). Machine Learning (ML) and Deep Learning (DL) which are two fundamental stakes of Artificial Intelligence (LeCun Y. B., 2015). Although DL is a branch ML, each adopts distinct approaches for enabling machines to learn and execute tasks. Whereas traditional ML is particularly effective in managing structured and relatively simple datasets, DL excels in processing unstructured and highly complex data, thereby extending the frontiers of what artificial intelligence systems are capable of achieving. Big Data and DL are deeply interconnected, with each playing a crucial role in advancing modern artificial intelligence (Joshi, 2020). The exponential growth of vast data has been a driving force behind the progress of DL. Big Data provides the rich and complex inputs necessary for training advanced neural networks. Without the availability of such extensive and varied data, the development of DL models would remain limited in scope and effectiveness. In turn, DL has transformed how we process and analyze big data. Its ability to automatically learn hierarchical patterns and features directly from raw data has revolutionized analytics. This capability allows systems to extract valuable insights and uncover hidden patterns that were previously inaccessible using traditional methods. Fields such as computer vision, natural language processing, and predictive analytics have seen unprecedented advancements because of this synergy.

Together, ML and DL form the backbone of modern AI, driving their transformative potential across industries and redefining how machines interact with the world. ML serves as the foundation, enabling systems to learn from data and improve their performance over time without explicit programming. It encompasses various methods, including supervised learning, where systems map inputs into outputs using labeled data, and unsupervised learning, which identifies patterns in unlabeled data, and reinforcement learning, where machines learn through trial and error by interacting with an environment (Morales, 2022). ML is widely applied in areas such as recommendation systems, fraud detection, and predictive analytics, often relying on human expertise to craft the features that guide learning.

DL takes these principles further by using multi-layered neural networks to automatically learn complex patterns and representations directly from raw data. This eliminates the need for manual feature engineering, making DL especially effective for unstructured data like images, text, and audio. Key architectures, such as Convolutional Neural Networks (CNNs) for image recognition, Recurrent Neural Networks (RNNs) for sequential data, and Transformers for natural language processing, have revolutionized fields like computer vision, autonomous vehicles, and real-time language translation (Russell, 2016). While early experiments with such networks, including convolutional neural networks, date back to the 1990s (LeCun Y. L., 1998), the field gained significant momentum only in 2010s. This breakthrough began with advancements in speech recognition (Hinton, et al., 2012) and soon extended to visual object recognition with the classification of the ImageNet dataset (Krizhevsky, 2012), marking the start of deep learning's transformative impact on AI.

In conclusion, fueled by advancements in hardware (e.g., GPUs), massive datasets, and innovative architectures, in domains traditionally considered the exclusive province of humans. Technologies like AlphaGo (Silver D. H., 2016) and AlphaZero (Silver D. H., 2018) (Sadler, 2019) showcased AI's ability to surpass human experts in complex domains such as the game of Go and the game of chess.

3.4. The Emergence of Generative AI

Generative AI represents a transformative phase in AI development. Tools like Generative Adversarial Networks (GANs) and Diffusion Models revolutionized content creation, enabling the generation of realistic images, videos, and audio.

Generative Adversarial Networks (GANs) have emerged in the second part of 2010s offering a groundbreaking approach to generating data that closely mimics real-world patterns and distributions. Since their introduction in 2014, GANs have revolutionized the field of generative AI, powering advancements in areas such as image synthesis, video creation, and data augmentation. This innovative framework, introduced by Ian Goodfellow and his collaborators, proposed a dynamic interaction between two neural networks - a generator and a discriminator - that engage in a continuous adversarial process (Goodfellow I. J.-A.-F., 2014). The generator creates synthetic data samples, aiming to replicate the characteristics of real data while the discriminator evaluates these samples, distinguishing between real data - from the training set - and fake data - produced by the generator. Through this adversarial interplay, the generator progressively improves, producing increasingly realistic data, while the discriminator refines its ability to detect inaccuracies.

Since their introduction, GANs have undergone remarkable advancements, with researchers addressing challenges and enhancing their capabilities through a series of key innovations. In 2015, the introduction of Deep Convolutional GANs (DCGANs) improved the stability and performance of GANs (Radford A. , 2015). By leveraging convolutional neural networks (CNNs), DCGANs enhanced the quality of generated images, establishing a new benchmark for generative modeling. One year later Invertible Conditional GANs (IcGANs) were introduced as an innovative framework for creating intuitive and controlled image edits (Perarnau, 2016). IcGANs extended the original GAN framework by incorporating additional input information, such as labels or textual descriptions. This provided even greater control, the framework integrates conditional labels, which enable precise, attribute-specific modifications. This allows for targeted edits, such as changing hair color or adding a smile, without manually altering other aspects of the image. In 2019, StyleGAN, a style-based generator architecture, was introduced (Karras T. , 2019). This algorithm allowed precise control over specific features of generated

images, such as facial expressions or hairstyles. StyleGAN set a new standard for image realism and flexibility, making GANs more practical and user-friendly.

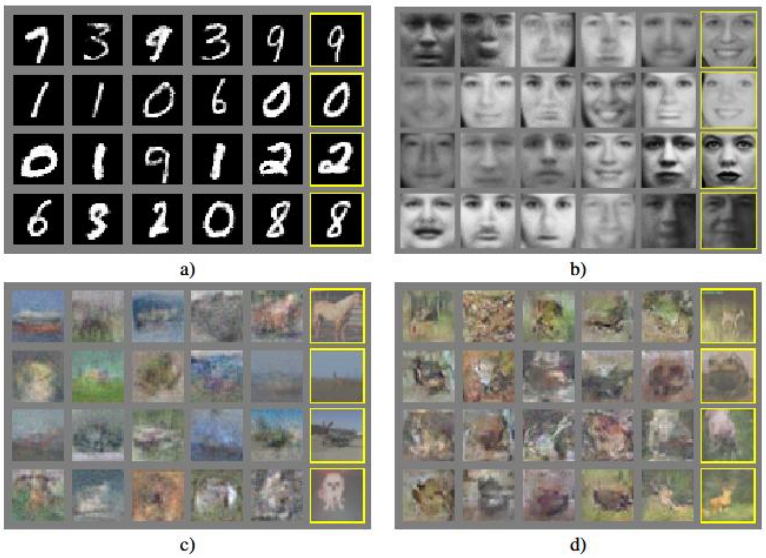

Figure 3-3 The generator creates synthetic data samples from training data. Source: (Goodfellow I. J.-A.-F., 2014).

GANs have left an indelible mark on artificial intelligence, revolutionizing how machines generate and manipulate data. In the realm of image synthesis, GANs have achieved the remarkable feat of creating photorealistic images that are virtually indistinguishable from real photographs. Despite their transformative impact, GANs face limitations. Training GANs can be computationally expensive and prone to instability, with issues like mode collapse reducing the diversity of generated outputs. These challenges, coupled with the need for extensive tuning, have spurred the search for alternative generative approaches. One such approach is Diffusion models, which address many of GANs' shortcomings while offering a stable and effective framework for generating high-quality outputs. The rise of diffusion models represents a significant evolution in generative AI, offering new methodologies that complement and extend the legacy of GANs.

Following the advent of GANs, diffusion models (DMs) have emerged as a foundational component of contemporary generative AI, particularly in the domain

of visual content generation, where they have significantly advanced the quality, coherence, and realism of synthetic imagery. These models draw inspiration from the physical concept of diffusion, which describes how particles move from regions of high concentration to areas of low concentration. In the context of AI, diffusion models simulate this process by incrementally adding noise to data during a forward phase and then reversing this process – from noise to data - to generate realistic outputs. The origins of diffusion models can be traced back to the broader field of probabilistic generative modeling. The groundbreaking paper *Deep Unsupervised Learning Using Nonequilibrium Thermodynamics* (Sohl-Dickstein J., 2015) introduced the first practical framework for diffusion probabilistic models. This work formalized the idea of a forward process that progressively adds noise to data and a reverse process that learns to denoise, effectively reconstructing the original data distribution. This framework provided the foundation for the following advancements in the field.

DMs gained then widespread recognition with their application in visual generative AI. The paper *Denoising Diffusion Probabilistic Models* (Ho, 2020) was a key moment, showcasing significant improvements in the quality and efficiency of diffusion-based sampling. This work demonstrated that diffusion models could produce photorealistic images, establishing them as a competitive alternative to GANs.

Building on this, researchers from Google Brain and Stanford University extended the mathematical underpinnings of diffusion models (Song, 2020) . Their work connected diffusion models to stochastic differential equations, making the process more robust and enabling high-quality sample generation. The practical impact of diffusion models became evident with the advent of tools like DALL·E, Midjourney, and Stable Diffusion. These systems brought text-to-image synthesis to the mainstream, allowing users to generate highly detailed and creative images from textual prompts. Their success underscored the potential of diffusion models to transform creative industries and open new avenues in AI research.

These developments set the stage for diffusion models to challenge existing generative approaches like GANs, which dominated generative AI before the rise of diffusion-based methods. While both are powerful tools for generating realistic data, they differ significantly in their methodology and outcomes.

GANs rely on an adversarial training process where a generator produces data samples, and a discriminator evaluates their authenticity. This competition can lead to high-quality outputs but is notoriously unstable (Goodfellow I. J.-A.-F., 2014), with issues such as mode collapse (Arjovsky, 2017), where the generator produces limited variations of the data. Diffusion models, by contrast, use a probabilistic framework that involves systematically adding noise to data and then learning to reverse this process. This avoids the adversarial setup entirely, resulting in more stable training and greater reliability (Ho, 2020). Diffusion models also excel in generating highly detailed and diverse outputs, often surpassing GANs in quality, particularly for high-resolution tasks (Dhariwal, 2021). Diffusion models offer several other key advantages. Their stability in training eliminates the challenges of mode collapse common in GANs (Arjovsky, 2017). They are also highly flexible, adaptable to a wide range of data modalities, including images, text, and audio (Kong, 2021). Moreover, they produce outputs with exceptional detail and diversity, making them ideal for applications requiring high fidelity (Ramesh, 2022). However, these models are not without limitations. Their computational demands are significant, requiring substantial resources for training and inference ((Song, 2020). The sampling process, which involves iterative denoising steps, is slower compared to GANs, which generate samples in a single forward pass ((Nichol, 2021). Additionally, the theoretical framework of diffusion models is more complex, posing a steeper learning curve for practitioners ((Sohl-Dickstein J., 2015).

While GANs and diffusion models have made significant strides in generating high-quality images and other data modalities, they were not inherently designed to handle text-to-image synthesis. To achieve this, machines first needed to acquire how to process and understand natural language challenges addressed by advancements in Natural Language Processing (NLP) and Large Language Models (LLMs).

Natural Language Processing (NLP), a branch of artificial intelligence, aims to provide machines with the ability to understand, translate, and generate human language. Over the decades, NLP has evolved from rule-based systems to statistical methods, and finally to the deep learning-based approaches that dominate today. The advent of Large Language Models (LLMs) represents the culmination of these advancements, with models like BERT and ChatGPT setting new benchmarks for language understanding and generation.

Initially, NLP depended on rule-based systems, requiring linguists to manually create grammatical rules and dictionaries to perform tasks such as translation and parsing. However, these systems were limited in scalability and adaptability. The 1990s saw the rise of statistical methods, which used probabilistic models to learn patterns from data (Brown P. F., 1990). The 2010s marked a turning point in NLP, as researchers began to embrace neural network-based approaches. These methods leveraged the power of deep learning to capture complex linguistic patterns, moving away from the rigid, rule-based systems of the past and the statistical methods that dominated the 1990s and early 2000s. This shift was driven by the realization that neural networks could learn hierarchical representations of language, enabling machines to understand and generate text in ways that were previously unimaginable.

The next major leap came in 2017 with the introduction of the Transformer architecture in the seminal paper by Google Brain research team, *Attention is All You Need* (Vaswani A. S., 2017). The Transformer replaced RNNs with an attention mechanism, which allowed the model to focus on different parts of the input sequence when making predictions, enabling it to understand context and relationships between words in a way that older models simply could not. This innovation addressed the limitations of RNNs by enabling parallel processing and capturing long-range dependencies in text more effectively. Furthermore, Unlike RNNs, which process sequences one word at a time in a linear fashion, Transformers process the entire sequence in parallel. This parallel processing makes them not only faster but also more efficient, especially when dealing with long sentences or complex tasks. It computes relationships between all words in a sequence, regardless of how far apart they are. By assigning higher weights to relevant words, the model can focus on the parts of the sentence that matter most to understand the meaning (Vaswani A. S., 2017).

First, each word in the input sequence is converted into a vector, known as an embedding. These embeddings capture the meaning of the words in a numerical form. Since Transformers do not process words in order like RNNs, they need a way to keep track of word positions. This is done using positional encodings, which are added to the embeddings to retain information about the order of words. Next, for each word, the model computes three vectors: the Query (Q), the Key (K), and the Value (V).

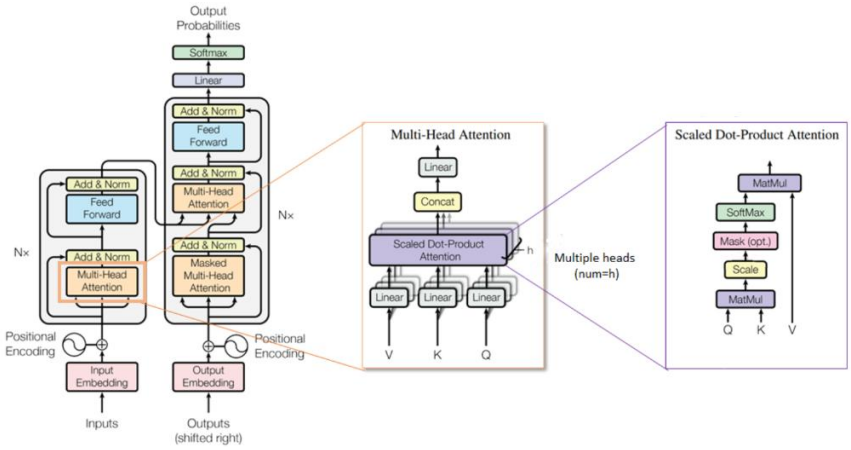

Figure 3-4 the Transformer architecture. Source: (Vaswani A. S., 2017).

The Query represents the word the algorithm is focusing on, the Key represents the words the algorithm is comparing to the query, and the Value represents the actual information the algorithm wants to use in the output. These vectors are learned during training and help the model understand how words relate to each other (Vaswani A. S., 2017).

The model then calculates attention scores by taking the dot product of the Query and Key vectors. This evaluates how much attention each word should have to every other word. These scores are scaled and passed through a softmax function to produce probabilities. Words with higher probabilities are considered more relevant. Finally, the model uses these probabilities to compute a weighted sum of the Value vectors. Words with higher attention scores contribute more to the output. This process is repeated for every word in the sequence, allowing the model to capture relationships between all words, no matter how far apart they are (Vaswani A. S., 2017).

To make the model even more powerful, Transformers use something called multi-head attention. Instead of computing just one set of Query, Key, and Value vectors, the model computes multiple sets in parallel, called heads (Figure 3-4). Each head focuses on different parts of the sequence, allowing the model to

capture diverse relationships. For example, one head might focus on grammatical structure, while another might focus on meaning. The outputs from all heads are first combined, and then this aggregation undergoes a linear transformation to create the final output. This multi-head approach gives the model a richer understanding of the input sequence (Vaswani A. S., 2017)..

Furthermore, The Transformer architecture consists of two main components: the encoder and the decoder. The encoder takes the input sequence, such as a sentence, and processes it using self-attention and feed-forward neural networks. It produces a set of representations, or embeddings, that capture the meaning of the input sequence. The decoder, on the other hand, generates the output sequence, such as a translated sentence, one word at a time. It uses self-attention to focus on the input sequence and masked self-attention to ensure it only looks at previously generated words, preventing it from deception by peeking at future words. The decoder also uses cross-attention to incorporate information from the encoder's output (Vaswani A. S., 2017).

The Transformer quickly became the foundation for nearly all modern NLP models. Its ability to handle large-scale data and complex language tasks made it a versatile tool for researchers. The attention mechanism proved to be a powerful way to model relationships between words, regardless of their distance in a sentence. This breakthrough set the stage for the era of LLMs (OpenAI, 2019).

With the Transformer architecture in place, researchers began to scale up models in size and train them on massive datasets. LLMs pushed the boundaries of what machines could do with language. One of the most influential models of this era was BERT (Bidirectional Encoder Representations from Transformers) (Devlin, 2019). BERT introduced a bidirectional approach to text processing, unlike earlier models limited to single-direction processing (left-to-right or right-to-left), enabling it to consider both preceding and succeeding context for each word. This made BERT exceptionally good at understanding the nuances of language, and it achieved state-of-the-art results on a wide range of NLP tasks, from question answering to sentiment analysis.

Around the same time, OpenAI was developing the GPT (Generative Pre-trained Transformer) series. Starting with GPT-1 (Radford A. N., 2018) and culminating in GPT-3 in 2020 (Brown T. B., 2020), these models demonstrated the power of

autoregressive language modeling - predicting the next word in a sequence based on the previous words. GPT-3, in particular, was a landmark achievement. With 175 billion parameters, it could generate coherent and contextually rich text, perform tasks with minimal prompting, and even write code or compose poetry. Its ability to generalize across tasks without task-specific fine-tuning was a testament to the scalability of LLMs. The release of ChatGPT in 2022 marked a new era in NLP. Built on the GPT-3.5 architecture, ChatGPT was fine-tuned using Reinforcement Learning from Human Feedback (RLHF (Ouyang, 2022), a technique that aligned the model's outputs with human preferences. This made ChatGPT not only highly capable but also more conversational and user-friendly. It could engage in dialogue, answer questions, and even admit its mistakes - capabilities that brought AI closer to human-like interaction.

Today, Transformers are behind many of the AI systems we use. They power language models like GPT, BERT, and T5, which are used for tasks such as text generation, classification, and translation. The success of ChatGPT was a culmination of decades of research in NLP, from the early days of rule-based systems to the neural network revolution and the Transformer architecture, and it showcased the potential of LLMs to transform industries.

Diffusion models and LLMs also enable multimodal models like DALL·E and CLIP, which process both text and images. Beyond language, Transformers are used in speech recognition systems like Whisper (OpenAI, 2025) and computer vision models like Vision Transformers (viso.ai, 2025). In essence, Transformers represent a paradigm shift in how machines process language and other sequential data. By replacing sequential processing with parallel self-attention, they unlocked new levels of performance and scalability. From translating languages to generating human-like text, Transformers have become the foundation of modern AI.

3.5. Evolution of Artificial Intelligence in Creative Fields

The intersection of technology and creativity dates back to the mid-20th century. Pioneering artists and engineers in the 1960s began using computers to generate images and designs according to algorithmic rules. In 1965, German researcher

Georg Nees held one of the first exhibitions of computer-generated graphics, featuring drawings produced by a program – a milestone in early generative art .Around the same time, others like Frieder Nake and A. Michael Noll publicly showcased algorithmic plotter drawings, proving that computers could autonomously create visual patterns ((Ren, 2023) .

Artists such as Vera Molnár experimented with simple geometric compositions via code (Malloy, 2003), and Harold Cohen developed AARON in the 1970s, a software that could automatically produce drawings with minimal human input (Cohen, 2016) as shown in Figure 3-5. These early efforts, influenced by cybernetics and systems theory, treated artmaking as a process that could be encoded in rules and executed by machines.

Figure 3-5. Arnolfini #1, Harold Cohen's AARON,1983 Unframed Dimensions 22.5 x 30 in. Plotter drawing in ink on paper. Source: (Lieser, 2025).

By the late 20th century, procedural creativity had spread to other domains. Musicians and writers embraced algorithmic methods, often using randomness or predefined rules, to generate music and text. Visual artists and designers likewise

explored generative processes beyond pure mathematics – for example, British musician Brian Eno introduced the idea of generative music in 1995, creating ever-evolving compositions from initial inputs (Eno, 1996). Architects like Celestino Soddu applied algorithms to iterate urban designs, using code to produce endless variations of city forms (Soddu, 1991). Around the same time, improvements in personal computing gave creators new tools. The introduction of programming environments like Processing dramatically lowered the barrier for artists to experiment with code-based art (Reas, 2024). This led to a boom in digital generative art in the 2000s, with artists from multiple disciplines (visual arts, music, design) all adopting algorithmic techniques to push creativity beyond manual methods.

Before today's era of deep generative models, early AI-related art techniques focused on manipulating existing media. A notable example is Neural Style Transfer (NST), introduced in 2015, which allowed the *style* of one image, for example Van Gogh's brushstrokes) to be applied to the content of another image, for example a photograph (Gatys, Image style transfer using convolutional neural networks, 2016). NST showed how convolutional neural networks could recombine visual patterns, though the results often blatantly blended existing imagery rather than creating novel content. Another 2015 innovation, DeepDream, emerged from experiments in visualizing neural networks. Google researchers developed DeepDream to enhance patterns that a neural net saw in an image, yielding surreal, dream-like visuals; this technique, initially meant to interpret neural layers, unexpectedly became a new form of computer-generated art with psychedelic outputs (Mordvintsev, 2015). These techniques were forerunners to contemporary generative AI. These tools demonstrated AI's potential, and they operated by transforming or remixing input images. A following big leap toward more complex generation came with GANs (Goodfellow I. J.-A.-F., 2014).

Figure 3-6 – Evolution of GANs generated Faces (Brundage, 2018) from (Goodfellow I. J.-A.-F., 2014), (Radford A. , 2015), (Liu M. a., 2016) and (Karras T. A., 2017).

Early GANs were limited, often producing blurry or low-res results), but they represented a turning point by showing that a machine could invent visual content (e.g faces, scenes, etc.) that had never existed before. By the late 2010s, improved GAN variants could produce photo-realistic human faces and other complex imagery (Karras T. A., 2017) (Brock, 2018), as shown in Figure 3-6.

By 2018, the impact of GANs on art was significant enough that an AI-generated portrait, *Edmond de Belamy*, created with a GAN was sold at Christie's auction for $432,500, prompting widespread debate about AI in the art world (Christie's, 2018). This period established that Generative AI could be used a creative tool or as a medium (Christie's, Is artificial intelligence set to become art's next medium? , 2018); however, using these early AI models often required technical expertise in machine learning, so the creators were usually technologists or collaborative artist-programmers (Cetinic, 2022).

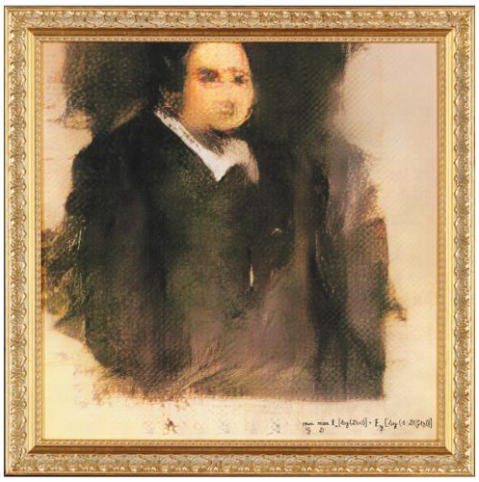

Figure 3-7 Portrait of Edmond Belamy, 2018, created by GAN. Source: (Christie's, 2018).

Another significant milestone in the evolution of generative AI for visual tasks was introduced in the paper *Generating images from captions with attention* (Mansimov, 2015), who proposed a novel model for generating images from natural language descriptions using attention mechanisms. Their approach combined a recurrent variational autoencoder with a visual attention module, enabling the model to iteratively construct images conditioned on textual input.

Although the visual outputs may appear rudimentary by current standards, as shown in Figure 3-8 Figure 3-8 Examples of images generated from captions. Source: , they represent a critical advancement in aligning linguistic and visual modalities. This work laid essential groundwork for subsequent innovations in text-to-image synthesis, demonstrating the feasibility of bridging natural language and image generation through deep learning, and highlighting the potential of attention-based architecture in enhancing the coherence and fidelity of generated outputs.

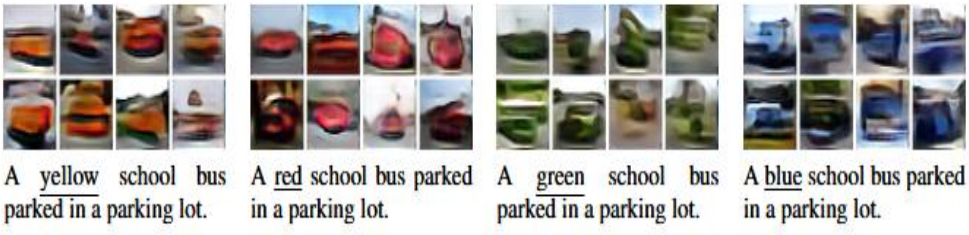

Figure 3-8 Examples of images generated from captions. Source: (Mansimov, 2015).

The next leap was the advent of diffusion models for image generation. Diffusion models generate images by iteratively denoising random noise, essentially learning to reverse a gradual noising process to arrive at a coherent image (Peebles, 2022). A crucial moment came when generative AI met natural language. In January 2021, OpenAI unveiled DALL·E, a 12-billion-parameter model capable of generating images from text descriptions (OpenAI, DALL·E: Creating images from text, 2021). DALL·E combined a transformer-based architecture with a generative image decoder, effectively merging language understanding with image creation. It could produce whimsical and complex images (e.g. "an armchair in the shape of an avocado") that followed prompts written in everyday language. Although the original DALL·E was not immediately released to the public, it proved the concept of text-to-image synthesis and inspired rapid development of similar models.

Table 3-1 T2I generators with release date. Source: Flavio Moriniello

	Release date	Creator	License
RunwayML	2018	Runway AI, Inc.	Proprietary
DALL-E	01/2021	OpenAI	Proprietary
DALL-E 2	04/2022	OpenAI	Proprietary
Midjourney	07/2022	Midjourney, Inc.	Proprietary
Stable Diffusion	08/2022	Stability AI	Stability AI CL
Firefly	03/2023	Adobe Inc.	Proprietary
Imagen	04/2023	Google	Proprietary
Ideogram 0.1	08/2023	Ideogram	Proprietary
DALL-E 3	09/2023	OpenAI	Proprietary
Imagen 2	12/2023	Google	Proprietary
Imagen 3	05/2024	Google	Proprietary
Flux	08/2024	Black Forest Labs	Apache License
Ideogram 2.0	08/2024	Ideogram	Proprietary
Aurora	12/2024	xAI	Proprietary
GPT Image 1	03/2025	OpenAI	Proprietary
Halfmoon	03/2025	Reve AI, Inc.	Proprietary
Ideogram 3.0	03/2025	Ideogram	Proprietary

When guided by text, using a text encoder like CLIP (Radford A. K., 2021) to steer the image toward a prompt, diffusion models achieved remarkable fidelity and diversity in image generation. By 2022, tools like MidJourney and Stable Diffusion, both based on diffusion processes, became widely available and user-friendly. These systems could take a written prompt and produce a high-resolution, novel image in seconds, bringing AI image generation to millions of users. Compared to earlier GAN or style-transfer outputs, diffusion model images were often more realistic or artistically convincing, and importantly, more controllable. For example, with refined prompts or guidance techniques, users could nudge the results in desired directions, making the AI more of a partner than a black box. The introduction of Stable Diffusion, an open-source model, and MidJourney, a proprietary service, in 2022 significantly broadened participation in AI art, everyday people with no ML background could create imaginative artworks just by describing them. With these advances, generative AI in visual art moved from marginal experiments to a global phenomenon, as shown in Table 3-1.

Among the most prominent institutional initiatives exploring the convergence of art and artificial intelligence, Google's *Artists + Machine Intelligence* (AMI) program, launched in 2016, represents an important initiative at the intersection of contemporary art and machine learning (Google, Google Arts & Culture, 2021). By offering technical mentorship, research support, and funding, AMI facilitates collaborations between artists and Google-affiliated AI researchers, enabling creative practices that explore the conceptual and aesthetic potentials of artificial intelligence (Google, 2016). The program has supported more than fifty artists globally, resulting in a diverse range of projects that span sculpture, performance, installation, and algorithmically generated media. Notably, AMI played a foundational role in early artistic experiments with neural networks, including organizing the first DeepDream art exhibition. While AMI could be recognized for its important role in fostering interdisciplinary innovation, it is equally important to remain attentive to its criticality. In particular, concerns persist regarding the institutional and corporate framing of creativity that such initiatives imply.

The period 2022-2025 has witnessed an explosion of exhibition concerning AI and artworks created with T2I, which has rapidly infiltrated the realm of contemporary art. In the span of just a few years, what began as an experimental tech novelty has evolved into an artistic medium, with *AI-generated* pieces appearing in notable museum and gallery exhibitions worldwide. This development has sparked lively debate about creativity and authorship, while also garnering critical recognition as artists and curators explore the technology's creative potential. In the sections below, several examples of generative AI artworks, displayed in exhibitions between 2021 and 2025, are explored. Each case being discussed as a significant breakthrough in the integration of AI into contemporary art practice.

One of the first AI-generated images to make international headlines was *Théâtre D'opéra Spatial*, created by Jason M. Allen using the Midjourney text-to-image model in 2022 (Kuta, 2022). This digital painting, depicting figures in a baroque opera hall gazing through a radiant circular portal, was awarded First Prize in the Digital Arts category at the Colorado State Fair art competition, as shown in Figure 3-9.

Figure 3-9 *Théâtre D'opéra Spatial* by Jason Allen. Source: (Kuta, 2022).

Allen spent roughly 80 hours refining this piece, iteratively inputting more than 620 text prompts into Midjourney and then enhancing the selected output with Photoshop and AI upscaling. When the news broke that the winning artwork was AI-generated, it exploded an intense public discourse on whether machine-made imagery should be considered real art. Many critics saw Allen's win as a watershed moment, a death of artistry, to some detractors, but to others a provocative statement on the evolving nature of creative tools (Roose, 2022) (Faber, 2022). The State Fair judges, who were initially unaware of the AI involvement, defended their choice, noting the image's imaginative storytelling and painterly spirit. *Théâtre D'opéra Spatial* thus represent a critical early flashpoint in the art world's reckoning with AI, forcing institutions and audiences to confront the expanding boundaries of authorship and artistic concepts in the age of generative algorithms.

Another notable example came in late 2022, the Museum of Modern Art in New York unveiled Refik Anadol's groundbreaking installation *Unsupervised*, marking one of the first major museum exhibitions of AI-generated art. *Unsupervised* is an immersive, large-scale digital artwork, a *living data sculpture*, that continuously evolves in real time on a 7,3×7,3 meters media wall (MoMA, 2022). To create it, Anadol trained a custom deep-learning model on the metadata and images of MoMA's entire collection (over 138,000 artworks) spanning 200 years. The AI

dreams as if it were wandering through MoMA's archives, constantly reimagining and transforming art-historical images into fluid abstract visuals. The result is a mesmerizing stream of algorithmic hallucinations: vibrant morphing forms and "psychedelic tapestries" paired with ambient sound, all dynamically influenced by real-time inputs like the museum's light, temperature, and crowd motion.

Figure 3-10 Three moments of *Unsupervised - Machine Hallucinations* by Refik Anadol. Source: (MoMA, 2022).

As with other similar initiatives, the project has drawn criticism from some commentators (Lossin, 2023); however, it can interpret it as an investigation into what a machine might conceive after assimilating the canon of modern art, an approach that positions the AI as a form of creative collaborator. The significance of Anadol's work lies in its institutional validation and poetic ambition: it demonstrates how generative AI can be used not just to mimic reality, but to produce novelty, an alternate, ever-changing interpretation of art history itself. On view in MoMA's lobby through 2023, Unsupervised attracted considerable visitor engagement, reportedly commanding far longer viewing times than many famous paintings and was eventually acquired into MoMA's permanent collection (Burke C. , 2024). In doing so, Unsupervised stands as a landmark for AI in fine art, illustrating a future where algorithms participate in artistic memory and creative expression within the museum space.

A different approach to AI art emerged in Alexander Reben's solo retrospective *AI Am I?* at the Crocker Art Museum of Sacramento in 2024. Among the works on view was *The Sentinel of Memory in the Valley of Vulnerability* (2023), a sculpture that blurs the line between machine-generated design and traditional craft (Crocker, 2023). Reben, who became OpenAI's first artist in residence, devised a

multi-step creative loop for this piece. He first asked a text-generating AI (GPT-3) to imagine a description of a sculpture, then fed that description into DALL·E 2 to conjure an image of the hypothetical artwork. Using the AI's output as a blueprint, Reben collaborated with human experts to materialize the object: an anatomy professor translated the AI image into a 3D model, and a foundry cast the form in bronze. he finished sculpture, resembling a classical bust that warp and comes alive as the viewer circles it, was showcased as a centerpiece of Reben's exhibition and was acquired by the museum, the first AI-generated work in the Crocker's collection (Schrader, 2023).

Critically, the sculpture exemplifies human–AI interaction in artmaking: the AI acts as a facilitator and editor of the author's ideas, bringing digital creation into the physical world. In analysis, this piece's significance is twofold. First, it highlights a conceptual inquiry into authorship and agency, posing the question of whether the creative spark resides in the AI's prompt-based imagination or in the artist's curation and handcrafting of the result.

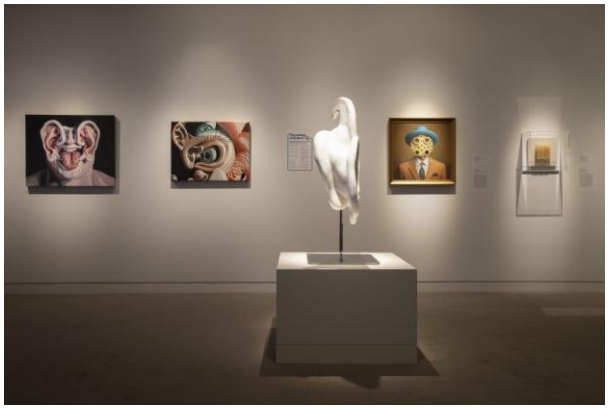

Figure 3-11 Installation view *The Sentinel of Memory in the Valley of Vulnerability*. Source: (Crocker, 2023).

Second, the work's inclusion in a museum show, and its acceptance into a permanent collection, further signals growing institutional recognition of AI-assisted art. As curator Francesca Wilmott observed, the sculpture encapsulates the exhibition's themes of back-and-forth with AI and the merging of algorithmic and human aesthetics (Schrader, 2023). Reben's practice, and this artwork in particular, thus also represents a significant development in contemporary art: it moves

beyond using AI for images on a screen, instead embracing it as a partner in generating tangible, conceptual art objects that challenge how we define the artist's role.

By 2023, entire exhibitions dedicated to AI art were being mounted, underlining the emergence of a new movement. A prime example is Finnish artist Roope Rainisto, whose AI-generated images were prominently included in *AI Surrealism,* billed as the world's largest AI art exhibition, held at the Oculus in New York City in June 2023 (Beyer, 2023). Rainisto is known for *Life in West America* (2022), a haunting series of AI-crafted pseudo-photographs that evoke mid-20th-century Americana with an uncanny twist (Rainisto, 2022). Using Midjourney and other tools, he generated visions of an alternate American West, complete with ghostly figures and dreamlike suburban scenes, which became highly acclaimed as an NFT collection and were later displayed as physical prints/screens in gallery settings. At *AI Surrealism*, a show featuring over 100 artists and 140 works), Rainisto was highlighted as a post-photography pioneer for his use of AI to push the boundaries of photographic art. The exhibition's curators explicitly linked the spirit of these works to the legacy of Surrealism: just as the Surrealists probed the subconscious through art, AI image generators can tap into a mysterious realm of the machine's imagination. Rainisto's *Life in West America* images, for instance, achieve a surreal quality, they appear authentic at first glance but reveal invented realities upon closer look, thereby challenging viewers' trust in the photographic medium and inviting interpretation much like a surrealist painting (Maier, 2023).

Figure 3-12 Examples of *Life in West America* by Roope Rainisto. Source: (Rainisto, 2022).

The critical significance of Rainisto's work in this context is manifold. Aesthetically, it demonstrates that diffusion models can produce artwork with narrative depth and stylistic coherence, not just one-off novelties. Culturally, the inclusion of these AI photographs in a major public exhibition, visited by art enthusiasts and casual passersby in a transit hub, symbolizes the popularizing of AI

art. Furthermore, *Life in West America* has been discussed as redefining artistic boundaries: it sits at the intersection of photography and fiction, raising questions about memory, authenticity, and the role of the artist when algorithms share in the image-making process Through high-profile showcases like *AI Surrealism*, Rainisto and his peers illustrated that AI art had matured into a diverse genre, surrounding everything from AI-generated photographic prints to animated fantasy scenes, and that this genre was earning its place alongside traditional media in galleries. In summary, Rainisto's *Life in West America* series, with its critical and popular recognition, represents a significant development in AI art: it proved that text-to-image models could be used to craft artistic narratives and led the way in bringing AI-based post-photography into exhibition halls.

The exhibition *AI: Artificial Intelligence*, held at the Centre de Cultura Contemporània de Barcelona (CCCB) from October 18, 2023, to March 17, 2024, offered a complete exploration of artificial intelligence (AI), from its historical development, operational mechanisms, creative potentials, and the ethical and legislative challenges it presents. This exhibition was a collaborative endeavor between the CCCB and the Barcelona Supercomputing Center–Centro Nacional de Supercomputación (BSC-CNS), adapted from the original touring exhibition curated by the Barbican Centre in London in 2019 (CCCB, 2023).

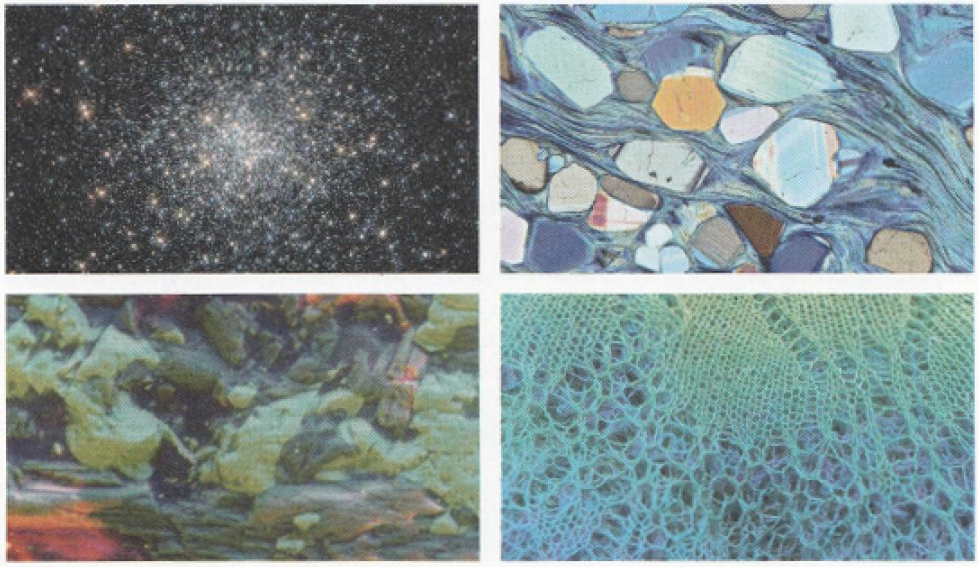

Figure 3-13 Experimental film AI-generated. *Abyss* by Jeppe Lange. Source: (Nacenta, 2023)

The exhibition aimed to demystify AI by presenting it as a multifaceted phenomenon that permeates various aspects of contemporary life. It encouraged visitors to engage critically with AI technologies, fostering a dialogue about their rapid integration into society and its implications. The exhibition underscored the dual nature of AI as both a source of innovation and a potential catalyst for ethical dilemmas, particularly concerning data privacy, misinformation, and inherent biases. The exhibition unfolded through a series of thoughtfully curated thematic sections, each offering a critical lens on a distinct aspect of artificial intelligence's development and social impact (Nacenta, 2023). It commenced with *Data Worlds*, a section that examined how AI systems perceive and interpret reality through vast datasets. This part of the exhibition illuminated the centrality of data collection processes while drawing attention to the biases and structural inequalities that can become embedded in algorithmic outputs. Following this, *Mind Machines* guided visitors through the historical progression of AI technologies, from early computational logic to the sophisticated architecture of contemporary neural networks. This segment probed the conceptual affinities between artificial learning systems and human cognition, inviting reflection on the ways machines emulate, or diverge from, biological models of intelligence. The narrative then shifted towards the imaginative dimensions of AI in *The Dream of AI*. Here, the exhibition explored the enduring human fascination with artificial minds, tracing cultural and literary representations from ancient myths to speculative science fiction. This section contextualized AI within broader philosophical and artistic traditions, highlighting the extent to which our visions of technology are shaped by narrative and metaphor. *Endless Transformation* addressed the dynamic and evolving nature of AI itself, focusing on its capacity to reshape understandings of creativity, authorship, and agency. By foregrounding emergent practices at the intersection of art and technology, this part of the exhibition underscored the fluid boundaries between human and machine in contemporary creative processes. Finally, the exhibition concluded with *And What Now?*, a reflective space that confronted the ethical, legal, and societal questions raised by the proliferation of AI. This section encouraged visitors to consider the implications of delegating decision-making to machines and underscored the imperative of maintaining human oversight and responsibility as these technologies continue to advance.

Visitors engaged with 25 interactive installations that provided experiential insights into AI's capabilities and limitations. For instance, one installation allowed participants to smell the flowers of a tree that went extinct in the previous century, recreated through AI, while another enabled them to add their voices to AI-

generated musical compositions. *AI: Artificial Intelligence* at the CCCB served as a platform for examining the widespread influence of AI in modern society. By integrating artistic expression with scientific explorations, the exhibition promoted a complete exploration of AI in contemporary society.

Another example is drawn from the exhibition *AI Yoga per Intelligenze Artistiche*, held from 19 to 29 September 2024 at the MEET Digital Culture Center in Milan, in which the author participated. Curated by Valerio Borgonuovo, the exhibition featured ten Italian artists, including Accurat, Francesco D'Isa, Lorem (Francesco D'Abbraccio), and Katsukokoiso (Eugenio Marongiu), who explored the creative potential of generative AI through a diverse array of mediums such as video, photography, information design, and interactive installations (MEET, 2024). The exhibition invited visitors into an immersive journey through MEET's galleries and its enveloping Immersive Room, prompting reflections on the role of AI as an inspirational muse capable of shaping new forms of art and exploring universal themes such as time, memory, environment, and human emotions. Critics have interpreted the exhibition as a manifestation of a new creative renaissance, wherein AI does not supplant human creativity but rather amplifies it, positioning the machine as a collaborative partner in the artistic process (Silvestro, 2024). As curator Valerio Borgonuovo noted, the exhibition serves as a manifesto for this emerging synergy between humans and machines in the realm of generative art (Borgonuovo, 2024).

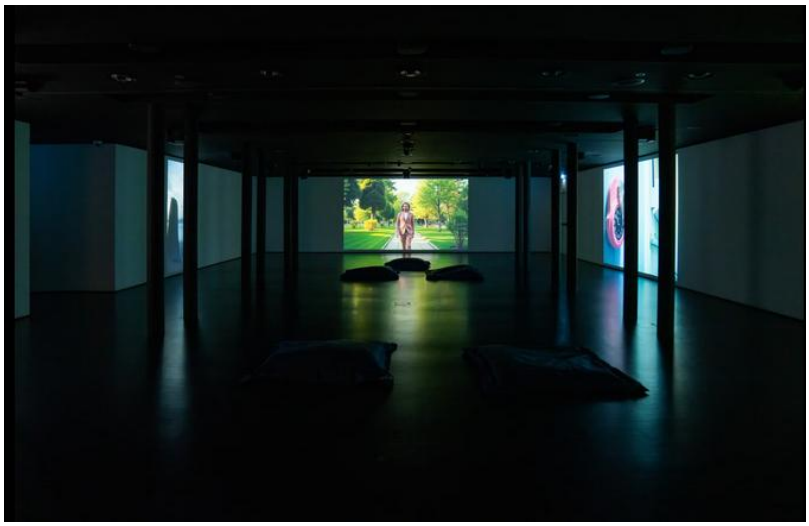

Figure 3-14 Installation View MEET, Experimental AI-generated film. *Me-Me* by Mauro Martino. Source: (MEET, 2024).

Finally, the recent exhibition *Apophenia, Interruptions: Artists and Artificial Intelligence at Work*, held at the Centre Pompidou from September 25, 2024, to January 6, 2025, examined the interplay between human creativity and artificial intelligence (AI) through six installations by contemporary artists: Éric Baudelaire, Holly Herndon and Mat Dryhurst, Auriea Harvey, Ho Rui An, Interspecifics, and Agnieszka Kurant (Pompidou, 2024). The exhibition's title references *apophenia*, a term introduced by Klaus Conrad in 1958 to describe the human tendency to perceive meaningful connections between unrelated elements, a phenomenon parallel to AI's pattern recognition processes, which can produce unintended associations or *hallucinations*. In the context of artificial intelligence, the term *hallucination* refers to instances in which a machine learning model produces outputs that are syntactically plausible but factually incorrect, logically incoherent, or disconnected from verifiable data. These algorithmic misalignments served as a fertile ground for artistic exploration, highlighting the intersection of machine logic and human interpretation. Curated by Joseph del Pesco (KADIST) and Marcella Lista (Centre Pompidou), the exhibition was the second phase of a three-year collaboration between the two institutions. It aimed to illuminate the transformative impact of AI on artistic practices and societal narratives, emphasizing the necessity of human oversight and experienced considerations in the integration of AI into creative processes.

Figure 3-15 Installation View, Experimental AI-generated film. *I'm Here* by Holly Herndon and Mathew Dryhurst. Source: (Pompidou, 2024).

3.6. Digital Media and Technology Theories

3.6.1. Algorithmic media

Marshall McLuhan's *Understanding Media: The Extensions of Man,* originally published in 1964, is a seminal work that examines the profound impact of media and technology on human perception, society, and culture. McLuhan's core argument revolves around the idea that media are not merely channels for communication but transformative forces and extensions of human faculties that shape human experience and social structures (McLuhan, 1994). This framework provides a powerful lens through which to analyze the transformative role of Artificial Intelligence (AI) in society. By viewing AI as a medium, therefore a tool that extends human capabilities, McLuhan's concepts can be reinterpreted to frame the societal and cognitive impacts of AI. McLuhan's assertion that *the medium is the message* suggests that the structural characteristics of a certain technology influence society more profoundly than the content it delivers. In this context, AI is not merely a tool for automating tasks or analyzing data; its very nature - autonomous decision-making, pattern recognition, and generative capabilities - redefines how humans interact with information, work, and creativity. For example, generative AI changes the creative process itself, enabling individuals to produce content with minimal technical expertise. In fact, the impact does not lie in the individual images or texts created but in how these tools transform creation and shift dynamics.

McLuhan viewed media as extensions of human faculties, such as the wheel extending mobility or television extending sight. Similarly, AI acts as an extension of human cognition, augmenting our ability to process information, solve problems, and make decisions. Machine learning systems extend memory and reasoning, while generative models amplify creation and might amplify creativity.

McLuhan categorizes media into *hot media* and *cool media* based on their level of engagement, therefore *hot media* are media that require little participation from the audience while *cool media* are media that demand active engagement and interpretation from the audience. This distinction can be applied to different AI systems based on their engagement levels taking into consideration that the classification is relative and can change over time. In general, it is possible to divide AI systems into *Hot AI* and *Cool AI*. *Hot AI* includes highly autonomous systems,

such as predictive models or self-driving cars, operating with minimal human intervention. These systems perform specific tasks with precision, requiring little input from users. *Cool AI* are collaborative systems, like co-creative platforms, involve significant interaction and participation from users. For instance, creating artwork with AI may require iterative prompts and adjustments, making the user a co-creator.

3.6.2. Mediology of Artificial Intelligence

Régis Debray's works, particularly *Media Manifestos: On the Technological Transmission of Cultural Forms* (1996) and *Transmitting Culture* (2000), provide a mediological perspective on the transmission of cultural forms and the interplay between technology, media, and society. These ideas offer a profound lens through which to examine the transformative role of Artificial Intelligence (AI) in contemporary culture. Mediology positions itself at the intersection of communication sciences, cultural history, and technology studies. Its aim is to study not only the messages themselves but also the infrastructures and systems that enable cultural transmission. The author redefines the concept of the medium to encompass more than just communication channels. It also includes the tools, techniques, and material structures that support and transform the flow of culture, such as writing, the printing press, or the internet (Debray, Media manifestos: on the technological transmission of cultural forms , 1996) (Debray, 2000). For example, the printing press did not merely distribute ideas; it restructured societal norms, communication, and power dynamics.

In the context of AI, this concept is strikingly relevant. AI functions not merely as a tool for automation but as a medium that fundamentally alters how cultural forms are produced, transmitted, and consumed. Furthermore, generative AI tools are not neutral technologies; they actively reshape creative workflows, redefine artistic authorship, and reconfigure the relationship between creators and audiences. These systems also mediate creation and creativity by generating images, texts, and designs that blend existing cultural influences with algorithmic interpretations, creating hybrid forms of cultural expression. In this sense, AI is not just a neutral medium but contributes in the cultural ecosystem, shaping and being shaped by the socio-technical contexts in which it operates. Finally, the materiality of AI, its algorithms, data, and computational processes, becomes the infrastructure for a new era of cultural production.

AI exemplifies this transformation in redefining authorship, accelerating cultural flows and restructuring creative labor. This transformation echoes Debray's idea of the interdependence between technological advancements and cultural forms. Considering the redefinition of authorship, the integration of AI into creative processes challenges traditional notions. Just as the printing press democratized access to written texts, AI is democratizing access to advanced creative tools, allowing non-experts to produce professional-quality outputs. Considering the acceleration of cultural flows, AI's ability to generate content rapidly compresses the temporal dimensions of cultural production, allowing for fast creation and dissemination, analogous to the acceleration of cultural flows in the digital age. Finally, considering reconstruction of creative labor, AI shifts the status of creative labor from the manual execution of ideas to the conceptual and curatorial tasks of guiding and refining machine outputs.

Debray's works also invite critical reflection on the implications of technological mediation. AI, like previous media technologies, introduces challenges concerning control and cultural differences. Regarding the issue of control, Debray was concerned about the concentration of power in the hands of those who control mediating technologies while, regarding cultural differences, AI's reliance on data-driven patterns risks homogenizing cultural expressions, potentially eroding local and unique cultural forms in favor of globally dominant norms.

3.6.3. Networks of Agency

Bruno Latour's *Reassembling the Social: An Introduction to Actor-Network Theory* (ANT) (2007) offers a compelling framework for understanding the dynamics of social systems, emphasizing the interplay between human and non-human actors. Latour challenges traditional views that place humans at the center of action, instead proposing that outcomes emerge from complex networks of relationships, where objects, technologies, and systems actively shape interactions (Latour, Reassembling the social: An introduction to actor-network-theory, 2007). This perspective is particularly relevant when analyzing the role of generative AI models which might be more than tools: they could be active participants in restructuring cultural, social, and creative practices.

Generative AI models exemplify Latour's concept of non-human actants, entities that contribute to the agency within a network. These models do not merely execute commands; they co-create, mediate, and transform processes in significant ways. For instance, in creative fields, tools like DALL·E enable users to produce sophisticated visual works by generating images based on text prompts. The creative process becomes distributed, where the human provides intent and direction, the AI generates content, and the underlying training data, drawn from vast repositories of cultural artifacts, serves as a critical intermediary. This distributed model of creativity directly aligns with Latour's idea that agency is not confined to humans but is instead shared across the network.

Latour's emphasis on tracing connections between actors also offers insight into the lifecycle of generative AI systems. From their origin, these models are embedded within vast, interconnected networks. Their training involves developers, computational infrastructure, and enormous datasets, each contributing to the model's capabilities and biases. When deployed, these systems interact with new actors, such as users, industries, and cultural institutions, creating feedback loops that influence how technology evolves. For example, the way users employ generative tools for art, design, or content creation feeds back into the broader socio-technical ecosystem, shaping future development priorities and societal expectations.

Generative AI models also serve as mediators that reshape cultural and social structures, a concept central to Latour's work. In cultural production, these systems redefine authorship and originality by enabling non-experts to create professional-quality outputs. This democratization of creativity challenges traditional hierarchies, placing advanced creative tools in the hands of individuals who might otherwise lack access. Economically, generative AI transforms workflows in industries like marketing, media, and entertainment, automating tasks and redistributing labor. At the same time, these systems introduce ethical complexities, as they often inherit biases from their training data. These biases, embedded in AI outputs, influence social norms and decision-making, reinforcing Latour's assertion that technologies are never neutral participants.

Latour's critique of reductionism is particularly instructive in discussions of AI. Debates around AI often fall into simplistic binaries, viewing it either as a neutral tool fully controlled by humans or as an autonomous force acting independently. Latour's Actor-Network Theory encourages us to move beyond these dichotomies,

understanding AI as part of a dynamic network where agency is shared, and outcomes arise from the interactions between diverse actors. This perspective highlights the complexity of AI's role in society, as it operates within a web of human intentions, technical constraints, and cultural contexts.

By applying Latour's Actor-Network Theory to generative AI, we can better understand its transformative impact. Generative AI is not simply a passive tool but an active participant that mediates and reshapes relationships across cultural, social, and economic domains. This perspective invites critical reflection on the responsibilities of those who design and deploy these technologies, emphasizing the need to consider the ethical and systemic implications of their integration into human networks. Latour's ideas provide a valuable framework for rethinking the evolving role of AI in our interconnected world.

Furthermore, in *Contemporary Applications of Actor Network Theory*, Williams, significantly contributes to the discourse on Actor-Network Theory (ANT), particularly concerning Artificial Intelligence (AI). The book provides empirically driven discussions and investigations into the relevance of ANT and its theoretical concepts in our technologically driven society (Williams, 2020). One notable chapter, *The Robots Are Here*, delves into the integration of AI and robotics within socio-technical networks, illustrating how non-human actors like AI systems interact with human counterparts to produce contemporary goods and services. This aligns with ANT's emphasis on the agency of both human and non-human actors in shaping societal outcomes.

3.6.4. Artificial Intelligence and *NonHuman Photography*

Joanna Zylinska's *Nonhuman Photography* also challenges the anthropocentric framework of traditional photography by exploring how nonhuman agents - such as algorithms, technological systems, and environmental forces - participate in the process of image-making. The book proposes a shift from seeing photography as an exclusively human-centric endeavor to understanding it as a distributed process where humans, machines, and natural phenomena work together. Zylinska's analysis not only expands the definition of photography but also places it within broader philosophical and ecological contexts.

Zylinska introduces the concept of *nonhuman photography*, where the act of capturing and producing images transcends human intent and agency. This

approach acknowledges that nonhuman entities, such as cameras, algorithms, and environmental conditions, play active roles in the creation of photographs. For instance, automated surveillance systems and drones capture images independently of human input, challenging the traditional notion of the photographer as the sole creator (Zylinska, 2017).

The book also discusses the ecological implications of photography, framing it as an entangled process embedded within larger systems of material and energy exchange. Zylinska critiques the extractive practices of modern photography, such as the environmental toll of manufacturing photographic devices and storing vast amounts of digital data. By rethinking photography, the author calls for a more ethical and sustainable approach to visual culture.

Zylinska's ideas resonate deeply with discussions about artificial intelligence and generative models. In many ways, AI acts as a nonhuman agent in creative processes, producing images, texts, and designs in ways that parallel her description of nonhuman photography. For example, generative models mirror Zylinska's concept by operating autonomously to create images based on vast datasets and algorithmic logic. Furthermore, the ecological critique of photography can be extended to AI, particularly regarding the energy-intensive processes required to train and run large-scale models. Zylinska's emphasis on sustainability is a timely reminder to interrogate the material costs of AI-driven creativity. Zylinska draws from posthumanism and new materialist theories to argue that photography - and, by extension, other forms of creative production - should be seen as a relational and distributed practice. This perspective encourages us even more to question hierarchical distinctions between human and nonhuman actors, emphasizing collaboration and interdependence. Similarly, in the context of AI, this framework invites a reconsideration of how human and machine creativity intersect and influence one another.

In summary, Zylinska's book provides a thought-provoking lens through which to examine the evolving role of technology in creative practices. Its insights are particularly relevant for understanding AI generative models, as they align with Zylinska's broader critique of anthropocentrism and her call for more inclusive and sustainable approaches to cultural production.

3.6.5. What Artificial Intelligence Want

Ed Finn's *What Algorithms Want: Imagination in the Age of Computing* explores the intersection of algorithms and culture, examining how computational systems shape human imagination, creativity, and behavior (Finn, 2018). Finn positions algorithms as cultural artifacts that influence, and are influenced by, human values, desires, and practices. By framing algorithms not simply as tools but as active agents within socio-technical systems, the book critiques the way algorithmic logic is increasingly embedded in everyday life.

Finn argues that algorithms are not neutral technological entities but deeply embedded in cultural frameworks. They reflect human biases and aspirations while simultaneously shaping the ways we think, create, and interact. For example, algorithms used in recommendation systems like those on streaming platforms guide user preferences, subtly influencing cultural consumption patterns.

Furthermore, Finn discusses how algorithms are often saturated with a mythic aura, portrayed as omnipotent entities capable of solving complex problems and optimizing systems. These narratives obscure their limitations and human labor behind their creation, perpetuating a utopian vision that overemphasizes their capabilities. The author also explores how algorithms themselves construct narratives through the data they process. Whether in the form of personalized recommendations or generative art, algorithms tell stories that align with specific cultural and economic agendas. Understanding these stories is crucial for unpacking the broader impact of algorithms on society.

Moreover, the book highlights the reciprocal relationship between human creativity and algorithmic processes. Algorithms expand the boundaries of what humans can imagine by generating new forms of art, music, and literature, yet they also constrain creativity by adhering to pre-programmed patterns and datasets. This duality prompts a reconsideration of what it means to be creative in an age where machines play an active role in artistic production.

The book’s insights are highly relevant to the study of AI generative models. These models embody many of the dynamics Finn describes. They reflect cultural and historical biases present in their training data, while also serving as tools for

expanding human creative capacities. For instance, the creative potential of generative AI aligns with Finn's analysis of algorithms as co-creators, capable of producing original content but constrained by the logic of their programming. Another similarity lies in the ethical concerns raised by Finn apply directly to generative AI, which inherits biases from its training datasets and has the potential to perpetuate inequality or misinformation. A final parallelism are the narratives constructed by generative AI tools highlight Finn's point about storytelling, as these systems generate text, images, and other media that shape user perceptions and cultural norms.

In conclusion, *What Algorithms Want* offers a broad critique of how algorithms influence human creativity, ethics, and culture. Its insights provide a valuable framework for understanding the broader implications of AI generative models, emphasizing the need for critical engagement with these technologies as they become increasingly integrated into artistic and cultural practices.

3.6.6. Artificial Intelligence Aesthetics

Lev Manovich's *AI Aesthetics* (2018) also provides an interesting point of view to analyze the transformative impact of artificial intelligence on cultural and artistic practices (Manovich L. , 2018). His exploration of how AI reshapes aesthetics, creativity, and authorship is particularly relevant for studying generative AI models. Manovich critically examined the implications of AI technologies in redefining the boundaries of creativity and human authorship.

One of Manovich's key arguments is that AI fundamentally transforms our conception of aesthetics. In traditional contexts, aesthetics has been rooted in human creativity, shaped by cultural, historical, and individual factors. However, generative AI models disrupt this dynamic by producing outputs that blend human input with algorithmic processes. For instance, tools like MidJourney generate images that draw on vast datasets of existing artworks, styles, and visual traditions. While these outputs can resemble human-made creations, their origins lie in the interplay of algorithmic computation and data patterns, raising questions about originality and artistic intent. Manovich's perspective encourages us to consider how generative AI shifts the site of creativity from individual human effort to a process between humans, algorithms, and datasets. Therefore, Manovich argues

that AI reshapes traditional notions of aesthetics by expanding the scope of creative tools available to artists and designers while simultaneously challenging the human-centric understanding of artistic innovation. These tools redefine the frameworks within which creativity and aesthetic value are understood.

Central to Manovich's analysis is the idea that in the era of AI, data has become the foundational element of aesthetics. Generative models are trained on massive datasets comprising images, text, and other media, and the content of these datasets directly shapes the aesthetic character of the AI's outputs. For example, a model trained primarily on Western art traditions may inherently prioritize those styles, potentially marginalizing non-Western or alternative forms of expression. This notion invites researchers to examine how training data influences the cultural and aesthetic norms embedded in AI-generated content, and whether these tools perpetuate or challenge existing biases in art and design.

Another significant theme in *AI Aesthetics* is the role of AI as a creative collaborator or not. Manovich argues that AI is not a replacement for human creativity but a tool that expands the boundaries of what can be imagined and produced. Applying this argument concerning generative models, it is important to notice that they allow artists, designers, and creators to explore ideas that would be impossible or prohibitively time-consuming to realize manually. For instance, DALL·E enables rapid prototyping of visual concepts, while GPT assists in generating narratives or text-based creative outputs. This collaborative dynamic redefines the creative process, shifting the artist's role from sole creator to co-creator, guiding and curating the machine's contributions.

Manovich also highlights how AI democratizes creative process by enabling mass customization and accessibility. Generative tools allow users, regardless of technical or artistic expertise, to produce high-quality outputs tailored to their individual preferences. This democratization empowers non-experts to engage in creative practices, breaking down barriers to entry that have historically defined artistic production. However, it also raises concerns about homogenization. If many users rely on the same AI models with similar training data, will this lead to a convergence of aesthetic styles and a loss of diversity in creative expression? Manovich's framework provides a basis for examining these tensions, exploring how AI simultaneously fosters accessibility while potentially constraining originality.

Finally, *AI Aesthetics* also calls attention to the ethical and cultural implications of AI in creative fields. Generative AI systems operate within specific cultural and technological frameworks, embedding certain values and biases into their outputs. This raises critical questions about agency and representation: whose aesthetic and cultural values are being prioritized, and whose voices are excluded? For example, the biases in AI training datasets may perpetuate dominant cultural paradigms while marginalizing others, subtly influencing the cultural narratives that AI-generated content reproduces. This perspective underscores the need for interdisciplinary inquiry into the implications of AI-driven aesthetics, blending technological, cultural, and philosophical considerations.

3.7. Digital Humanities Theories

3.7.1. Patterns of Culture

Lev Manovich's *Cultural Analytics* provides an in-depth exploration of the use of data-driven methodologies for analyzing cultural and artistic phenomena (Manovich L. , 2020). The book serves as a manifesto for exploiting computational tools to engage with cultural artifacts and processes in ways that were previously unimaginable. Manovich bridges disciplines, blending media theory, cultural studies, and data science to present new ways of interpreting cultural production, circulation, and reception in the digital age.

Manovich emphasizes the importance of adopting quantitative and computational methods to understand culture in the context of a data-saturated world. He introduces the concept of cultural analytics, which applies big data techniques and visualization tools to study patterns in cultural data, such as images, videos, and texts. This approach enables researchers to uncover trends, variations, and correlations that traditional methods might overlook. The book also examines the evolution of digital culture, focusing on the increasing availability of cultural datasets from platforms like Instagram, YouTube, and Google Arts & Culture. Manovich discusses how the digitization of cultural artifacts and the rise of user-generated content provide rich material for computational analysis.

One of the book's critical contributions is its relevance to contemporary debates about artificial AI in the creative industries. Manovich explores how

algorithms shape cultural production by curating, filtering, and even generating new content. AI's role in shaping aesthetic judgments and cultural narratives is highlighted as both an opportunity for innovation and a challenge to traditional notions. A significant portion of the book is devoted to the power of visualization as a tool for cultural analysis. Manovich showcases case studies where large-scale visualizations of cultural artifacts reveal previously hidden dimensions of style, content, and influence. This focus on visual culture aligns with his broader critique of how digital tools both reflect and reshape cultural practices.

In conclusion, Cultural Analytics offers a theoretical and practical guide to understanding the intersection of culture, technology, and data. Its insights are particularly relevant for scholars studying AI's impact on art and culture, providing both a methodological framework and a critical perspective on the opportunities and challenges of computational approaches to culture.

3.7.2. Digital Traces

Richard Rogers' *Digital Methods for Cross-Platform Analysis* also offers a methodological framework that is highly relevant for studying the cultural, social, and technological impacts of generative AI models. His approach emphasizes analyzing digital traces and the dynamics of media systems to understand how technologies are discussed, adopted, and integrated into societal frameworks (Rogers R. , 2017). By applying these principles to mass media technology outlets like WIRED, as was done in the following chapter, it is possible to gain valuable insights into how generative AI is represented, perceived, and contextualized in media and public discourse.

Mass media technology magazines like WIRED serve as key nodes in the ecosystem of cultural transmission, shaping how new technologies are introduced and understood by both professionals and the general public. By analyzing articles, editorials, and reports published in WIRED, researchers can map the evolving narratives around generative AI, identifying recurring themes, concerns, and opportunities highlighted by the media. Technology magazines like WIRED not only report on AI but also act as mediators that shape public perception through their framing of the technology. For example, an exploration of WIRED's coverage could reveal whether the focus is on positive narratives or negatives ones such as the creative potential of generative AI, its ethical dilemmas, or its economic

implications. Analyzing their narratives over time allows researchers to identify shifts in emphasis, such as a transition from initial enthusiasm about generative AI's capabilities to a more critical focus on its societal risks, including misinformation or bias.

Furthermore, WIRED provides an excellent case for examining the relationship between media and technological trends. By tracking the coverage of generative AI in WIRED alongside its adoption in real-world applications, researchers can better understand how the media shapes and responds to technology's trajectory. This aligns with Rogers' idea of analyzing systems not as isolated entities but as interconnected networks of influence. This approach highlights the importance of analyzing media as a critical component of the socio-technical systems that define our relationship with AI technologies.

3.8. Public Perception of AI

Public perception of AI is a complex domain, and it is shaped by intersecting factors such as media narratives, trust in institutions, individual knowledge, and socio-cultural context. A consistent theme across literature is that public attitudes toward AI are deeply tied to the perceived risks and benefits of the technology, often moderated by trust, awareness, and context of application.

An early study provides a foundational longitudinal analysis of AI representation in media, finding a gradual shift toward more optimistic coverage since 2009, particularly regarding AI's promise in education and healthcare. Yet, this optimism is counterbalanced by rising public concern over job displacement and loss of control, illustrating a dual perception rooted in both hope and apprehension (Fast, 2017).

Another study supports the fact that public attitudes are also strongly shaped by how AI is represented in mass media (Nader, 2022). The researchers show that entertainment media plays a crucial role in framing public understanding of AI. Their findings indicate that individuals who view fictional AI portrayals as realistic are more likely to hold polarized beliefs, ranging from utopian visions of emotional

companionship to dystopian fears of authoritarian surveillance, regardless of actual technological capabilities.

Similarly, Owsley and Greenwood emphasize the mediating role of news media in shaping awareness (Owsley, 2024). They argue that low public recognition of AI in news production reflects broader transparency deficits and demographic disparities in technological literacy. This finding aligns with Pew Research Center's report, which highlights general ambivalence among Americans, noting that acceptance of AI depends heavily on context, perceived utility, and presence of regulatory safeguards.

Perceived utility is also a key determinant of acceptance. A study report that in Australian cities, AI is more positively received when it supports disaster response and urban services but is met with skepticism when deployed by corporations or government bodies, especially in areas involving surveillance or data privacy (Yigitcanlar, 2024). These concerns echo those outlined by another prior research whose *Octagon* model reveals that support for AI varies widely across contexts (e.g., military vs. customer service) and is strongly influenced by age and prior knowledge of AI.

Trust also emerged as a significant moderator in Danish study (Holm, 2023). They found that while people value protective features such as explainability and fairness, their importance intensifies when decisions have direct personal consequences. Brauner further explores this through a *criticality map*, identifying cybersecurity risks as highly salient and undesirable outcomes, especially among respondents with low trust in AI systems (Brauner, 2023).

Another study that expands this analysis globally, concludes that trust, perceived risk, and societal impact are central aspects in determining AI acceptance (Gerlich, 2023). Its findings suggest that polarization in sentiment is not only ideological but also rooted in differential exposure to AI and its perceived fairness. These results are confirmed by recent public perception review, who emphasizes that public perceptions are highly contingent upon social identity, lived experience, and inclusivity in AI design processes (Kendall Roundtree, 2024).

In conclusion, public perception of AI is not uniform but shaped by dynamic interactions among media representation, trust, contextual relevance, and individual experience. Through diverse populations and methodologies, literature consistently demonstrates that public trust is raised by offering transparent and ethically aligned design.

3.9. Legal Challenges in Regulating AI-Generated Content

The legal issues surrounding AI-generated content present several critical challenges for contemporary intellectual property (IP) law. Existing legal frameworks, particularly in copyright, trademark, and patent domains, were designed with the previous assumptions concerning human authorship and inventorship, rendering them inadequate to address the complexities introduced by generative AI technologies.

A recent study emphasizes the inadequacy of current IP regimes in accommodating works created with minimal or no human intervention (Wen, 2024). In copyright law, the requirement for human authorship precludes protection for AI-generated works, leaving such outputs in a legal limbo. Similarly, in patent law, legal providing mandate a named human inventor has blocked attempts to grant inventorship to AI systems, as demonstrated by the widely discussed DABUS case. In this case an AI system, DABUS (Device for the Autonomous Bootstrapping of Unified Sentience), was designed by Dr. Stephen Thaler, DABUS's owner and creator, as the inventor because it autonomously created the inventions. However, patent offices and courts in various jurisdictions, including the UK, the European Patent Office (EPO), and the US Patent and Trademark Office (USPTO), rejected DABUS as an inventor as the inventor on patent applications stating that an inventor must be a natural person with legal capacity (Kim, 2022). These rigid legal definitions not only obstruct the protection of AI-generated innovations but also generate uncertainty over ownership rights and liability for infringement.

The U.S. Copyright Office follows this concern in its review of unauthorized digital replicas, such as AI-generated images or voices that imitate real individuals. The report concludes that current laws, spanning state-level publicity rights and federal copyright statutes, fail to offer consistent and effective remedies (Office.,

2024). It proposes new federal legislation establishing a sui generis right for individuals over highly realistic digital replicas of their likeness or voice. Crucially, these proposed protections would extend beyond celebrities to cover all individuals, acknowledging the widespread accessibility and risk associated with generative AI tools. The Office also addresses constitutional concerns by recommending a balanced approach that upholds First Amendment principles while enabling statutory enforcement mechanisms like injunctive relief and statutory damages.

Together, these works illustrate an agreement among scholars and policymakers that comprehensive legal reform is necessary. Such reform must include explicit definitions of AI-generated works, mechanisms for assigning rights and responsibilities, and harmonized standards that reflect the hodiern reality.

3.10. Bias in AI Models

Recent research has increasingly investigated the presence and implications of bias in AI generative systems. A consistent theme across the literature is the amplification of existing social stereotypes, particularly along lines of gender, race, and culture.

An early work demonstrated that text-to-image models like Stable Diffusion replicate and even intensify real-world demographic stereotypes, frequently generating images of white males for prestigious professions (Bianchi, 2022). This foundational concern has since been confirmed and extended by multiple studies.

Mannering further illustrated the entrenchment of gender stereotypes by using object detection to show that male and female prompts consistently generated images with gender-specific objects, such as ties for men and handbags for women (Mannering, 2023). Similarly, another study found text-to-image models to encode implicit associations across gender and race, associating science more with men and lighter skin tones with positive valence. These visual associations were systematically quantified using a novel adaptation of the Implicit Association Test (Wang J. L., 2023).

Vice expanded the methodological toolkit for bias detection by introducing three metrics - Distribution Bias, Jaccard Hallucination, and Generative Miss Rate - to quantify social and general biases in text-to-image models across different settings. Their findings confirm persistent underrepresentation of women and other marginalized groups, even in task-oriented contexts, highlighting that such biases are not merely incidental but structurally embedded in model behavior (Vice, 2025).

Researchers have also attempted to clarify sources of bias. It is argued that apparent bias amplification may stem more from prompt-to-caption mismatches than inherent model flaws, cautioning against simplistic attributions of blame to training data (Seshadri, 2023). Meanwhile, a research group empirically verified that gender and racial disparities persist even when prompts are designed to be neutral, indicating limitations in prompt engineering as a standalone mitigation strategy (Naik, 2023).

Two survey studies highlighted not only methodological fragmentation in bias evaluation but also a general neglect of non-binary and geo-cultural dimensions. They call for a unified, human-centered evaluative framework (Wan, 2024) (Wu, 2024). Efforts toward standardization are supported by tools like TIBET, which dynamically identifies relevant bias axes using LLMs and measures them via Concept Association Scores (Chinchure, 2025).

In parallel, several researchers have explored mitigation. Esposito et al. introduced Diversity Finetuning (DFT), a retraining strategy that demonstrably improved demographic balance in image outputs (Esposito, 2023). However, a more recent study cautioned that mitigating bias along one axis may exacerbate it along another, pointing to the complex interdependence between bias dimensions (Shukla, 2025).

The literature also reflects growing concern with the psychological and societal implications of bias. Reception of AI-generated content was examined, showing that biases in perceptions can also influence the perceived value and credibility of AI-generated art (Neef, 2024) (Millet, 2023).

Finally, new approaches such as *OpenBias* adopt an open-set detection paradigm to discover emergent biases not predefined by the researcher,

complementing earlier closed-set evaluations and offering more flexible bias detection in dynamic environments (D'Incà, 2024).

In conclusion these studies reveal not only the pervasiveness of bias in AI models but also the necessity of intersectional, interdisciplinary, and technically robust strategies to detect, interpret, and mitigate these biases.

3.11. AI, Creativity, and the Creative Domain

Some researchers have examined the role of AI within creative practices, exploring both its potential to augment human creativity and the socio-cultural transformations it effects across artistic domains. A growing body of research investigates AI not merely as a technological tool but as a co-creative agent, capable of reshaping longstanding paradigms of methodology, authorship, originality, and artistic labor.

Ibrahim examines AI's role in visual art performances using a mixed-methods approach (Ibrahim, 2023). The study finds that AI expands creative capacities and enables more immersive audience experiences but cautions against viewing AI as a substitute for human creativity. Instead, it proposes that AI be understood as a tool that enhances, rather than displaces, the expressive agency of artists.

Grassini and Koivisto apply Guilford's creativity framework (Guilford, Measurement and creativity, 1966) (Guilford, 1967), specifically focusing on divergent thinking to evaluate AI's creative performance (Grassini, 2025). Using the Figural Interpretation Quest (FIQ), they compare ChatGPT-4's interpretations of abstract figures with those of human participants. While AI demonstrated superior flexibility in generating interpretations, human responses were perceived as more creatively nuanced. This suggests that although AI can mimic certain creative behaviors, human intuition and subjectivity continue to define the higher tiers of perceived creativity.

Another study similarly explores generative AI integration into creative contexts through a systematic literature review guided by both information systems theory

and creativity research (Heigl, 2025). The study concludes that generative AI functions more as a creative collaborator than a replacement for human artists. Human input remains essential to guide the generative process meaningfully, though the increasing inability of experts to distinguish between human and AI-generated works signals a growing aesthetic convergence.

Complementing these findings, Doshi et al. provide empirical evidence from an experimental study examining short story creation. Their results reveal that generative AI significantly enhances individual creativity, especially among less experienced writers, but at the cost of collective novelty. Stories produced with AI support tend to converge stylistically, suggesting a trade-off between individual productivity and cultural diversity (Doshi, 2024).

Extending beyond individual creativity, a recent study presents a broader cultural perspective using a PRISMA-based literature review (Yadav, 2025). They argue that AI is fundamentally transforming the function of art in society by democratizing access to artistic tools and altering the ways art is created, consumed, and interpreted. However, this transformation also raises complex questions about authorship, ethical representation, and cultural identity, urging caution in the wholesale embrace of AI as a creative agent.

Similar findings are addressed through the lens of labor theory, introducing the *meaningful work* framework to understand the implications of AI in media and cultural industries (Bender, 2024). The study critiques the prevailing *replacement* narrative of automation and instead advocates for AI's use in amplifying human creative labor. It highlights the need for creative industries to clearly articulate and preserve the distinct value of human contributions in collaborative human-AI workflows.

In their systematic review, Oksanen et al. document AI's empirical use across fine arts, emphasizing both its capacity for innovation and the ethical and legal complexities it introduces (Oksanen, 2023). The review underscores that while AI may enhance creative practice, it simultaneously disrupts traditional notions of artistic ownership and cultural production, thereby demanding regulatory and critical analysis.

Finally, Andrews further centers artistic agency in AI development through an arts-led research approach (Andrews, 2024). The study argues that artists bring unique epistemic and aesthetic insights to AI design, enabling the creation of more inclusive and reflexive technologies. The study highlights the potential of artist-AI collaborations to subvert normative assumptions embedded in mainstream AI systems.

Collectively, these studies signal a paradigm shift in the understanding of creativity and artistic labor in the age of AI. While generative technologies hold immense potential for augmenting human expression, their integration into the creative domain necessitates thoughtful consideration of cultural, ethical, and socio-economic dimensions.

3.12. AI Hype

Finally, a brief literature review on AI hype was conducted to examine how inflated narratives surrounding AI innovation often conceal the technology's limitations, risks, and underlying structural realities in its development and deployment.

Floridi situates AI hype within the framework of economic *tech bubbles*, drawing analogies to historical speculative waves such as multiverse, cryptocurrencies and NFTs (Floridi, Why the AI hype is another tech bubble, 2024). He argues that the AI sector currently displays hallmark signs of a bubble, extreme valuations, unsustainable expectations, regulatory lag, and investor hysteria. These dynamics, the author warns, could culminate in another *AI Winter* if corrective measures are not taken. He calls for a shift toward realistic, value-driven investment and governance that prioritizes tangible societal benefit over speculative enthusiasm.

Expanding the scope to practical and ethical consequences, LaGrandeur offers a case-based critique of AI hype through examples from self-driving technologies, legal practice, and employment (LaGrandeur, 2024). He illustrates how exaggerated claims about AI capabilities have led to unsafe and unethical applications, such as premature deployment of autonomous vehicles and legal professionals misusing generative models. The study contends that misrepresentation not only endangers

public welfare but also undermines professional integrity and societal trust, necessitating improved regulatory oversight and AI literacy.

Addressing the visual and symbolic dimension of hype, Vrabič Dežman critiques the aesthetic strategies used in media portrayals of AI (Vrabič Dežman, 2024). Through a sociotechnical and political lens, the author argues that media stock imagery, often dominated by anthropomorphic or fantastical representations, reinforces reductive and idealized conceptions of AI. This visual economy suppresses democratic engagement and critical discourse, and he advocates for dissension imagery that reveals AI's embedded infrastructural and labor conditions.

Finally, a last study adopts a comprehensive socio-technical systems approach to map the mechanisms and consequences of AI hype (Markelius, 2024). It highlights how narratives around AI are amplified by anthropomorphism, media exaggeration, and institutional FOMO (fear of missing out), ultimately entrenching systemic harms. These include ecological strain from high energy use, social inequality from workforce displacement, and epistemic erosion through over-reliance on automated systems. The authors call for transparent regulation, stakeholder accountability, and public education to mitigate these multi-dimensional costs.

In conclusion, these studies converge on the conclusion that AI hype is not a benign promotional phase but a structurally embedded phenomenon with profound risks. They call for a multidisciplinary re-evaluation of AI’s development, one grounded in critical engagement, sustainability, and public responsibility.

4
AI Coverage, Sentiment Analysis and Public Perception

As part of this research, a peer-reviewed article, *Exploring the Relationship Between the Coverage of AI in Wired Magazine and Public Opinion Using Sentiment Analysis*, was published in Applied Science (Vol. 14, Issue 4) on February 28, 2024 (Moriniello F. M.-T., 2024). The study, co-authored by Ana Martí-Testón, Adolfo Muñoz, Daniel Silva Jasaui, Luis Gracia, J. Ernesto Solanes, and myself, presents key findings related to narratives surrounding Artificial Intelligence in emerging technology Magazines. This publication contributes to the foundation of the present chapter, providing quantitative and qualitative analysis.

4.1. Prelude to Wired's AI Narrative

Since the mid-2010s, the integration and influence of Artificial Intelligence (AI) across societal domains have markedly expanded. While its transformative potential is widely celebrated, parallel discourse has underscored ethical, economic, and social implications. Consequently, AI has become a focal point in both news media and popular discourse, where coverage directly shapes collective understanding. Given the media's critical role in framing technological narratives, systematic

evaluation of sentiment in these outlets is essential for understanding both its influence and the public debate.

This chapter reports on a sentiment-analysis of Wired Magazine's AI coverage from January 2018 through April 2023. Wired Magazine is consistently acknowledged as a premier and highly influential periodical in the domains of technology and innovation. Employing two established lexicon-based methods, AFINN and VADER, the tone of 4,265 articles, was assessed and categorized each as positive, negative, or neutral. A complementary term-frequency analysis classified articles by the intensity of AI references, and linear regression was applied to monthly sentiment aggregates to detect temporal trends. Our results reveal a prevailing positive sentiment alongside concurrent upward trajectories in both positive and negative scores, indicating growing polarization that carries significant implications for the discourse around these technologies.

4.2. AI's Ascent and Media Narratives

In recent years, artificial intelligence has undergone remarkable advancements (Kiela, 2021) (Ramesh, 2022) (Liu Z. M., 2022) (Chowdhery, 2022). Although the benefits of AI are widely acknowledged, its expanding role in shaping cultural norms and influencing decision-making has also generated substantial concerns about its societal, economic, and ethical implications (Crawford K. W., 2016) (Campolo, 2017) (Manovich L. , AI aesthetics, 2018) (Rainie L. C., 2022) (Zhang D. M., 2021) (Zhang, Clark, & R., 2022). As a consequence of this facts AI is expanding interest across many disciplines such as technology, business, and scholarly research (Littman, 2021). Therefore, AI has attracted significant attention and debate within academic institutions but also news media, and popular culture, as illustrated by Google Trends data shown in Figure 4-1 (Nestor Maslej L. F., 2023) (Google, 2023).

Media portrayals of AI substantially update public understanding of its capabilities, potential benefits, inherent risks, and ethical considerations, thereby it could play a central role in shaping societal perceptions (Damstra, 2021). Evaluating the representation of AI in media outlets is instrumental for critically assessing the objectivity, bias, and influence of such portrayals on public sentiment, thereby notifying the development of strategies aimed at fostering critical awareness and enhancing societal literacy regarding AI technologies. The present study

investigates the tonal variations and framing structures employed in Wired Magazine's AI-related content over the period January 2018 - April 2023, juxtaposing these findings with survey-based measures of public opinion on AI. Its primary goal is to discern salient patterns in media discourse that may shape or mirror collective attitudes toward AI, thus initiating a deeper understanding of the bidirectional relationship between media representations and public perceptions.

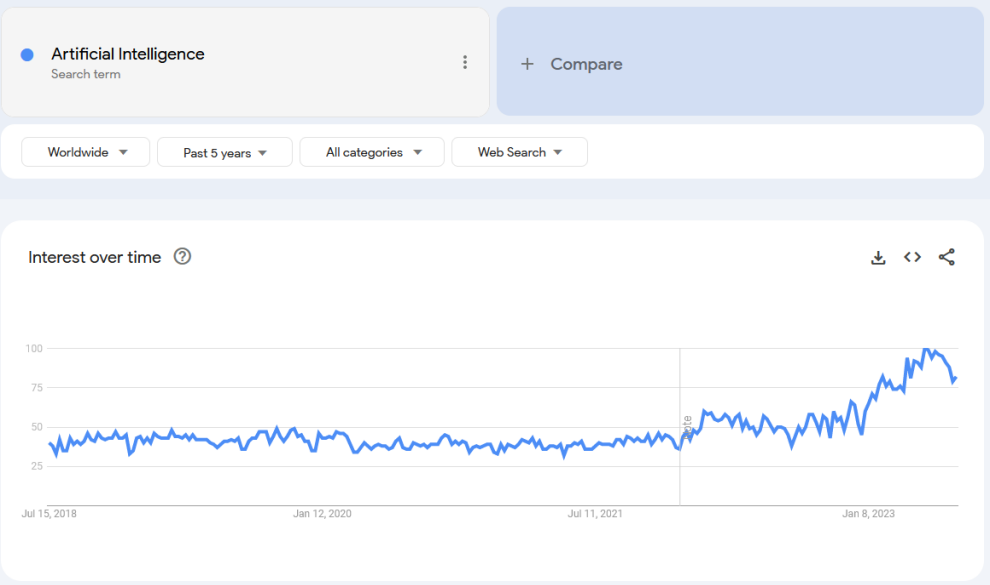

Figure 4-1 Interest over time of *Artificial Intelligence*. Source: (Google Trends, 2023)

To achieve this, we employed text-mining techniques on a corpus of 4,265 Wired articles, processing and analyzing the data within the R environment. In the meanwhile, existing empirical studies on AI sentiment were analyzed to characterize broader public viewpoints. By investigating the evolving narrative stance of a leading technology publication, this research offers valuable insights into the role of specialized media in informing and influencing public comprehension and attitudes toward emerging AI technologies

As a monthly American publication dedicated to emerging technologies and their intersections with culture, economy, and politics, Wired Magazine consistently ranks among the most influential technology outlets, surpassing thousands of online magazines in both web traffic and social media engagement, and reaches a diverse, global readership (Statista, 2023). The growing prominence of AI in

contemporary society, evidenced by its uninterrupted presence in outlets such as Wired Magazine, underscores the necessity of gauging public sentiment toward this transformative technology. Due to Wired's persistent coverage, it was possible to provide a panoramic view of how the narrative has shifted over time. The initial observations, reading random articles already suggested both strongly optimistic narratives indicating favorable views, and strongly apocalyptic ones, indicating deeper critiques and concerns. This simultaneous description with both favorable and adverse tones reveals a possible polarized discourse, highlighting the imperative for ongoing quantitative media-analysis to enrich existing research on AI portrayal and public perception (Fast, 2017) (Natale, 2020) (Owsley, 2024) (Ikkatai, 2022) (Yigitcanlar, 2024) (Chuan, 2019) (Whittlestone, 2019) (Müller, 2016) (Nader, 2022) (Brauner, 2023) (Gerlich, 2023).

4.3. Artificial Intelligence and Society

The sudden progression of Artificial Intelligence within contemporary society can be attributed to various converging factors. Among the most relevant are the concurrent availability of high-performance, affordable computing resources and extensive data repositories, as well as the accelerated impetus of the private sector, which has surpassed academic institutions in recent years. Prior to 2014, groundbreaking advancements in machine learning were predominantly led by the academic community; however, this leadership has since shifted to industry stakeholders (Crawford K. W., 2016).

A recent investigation reveals a notable disparity in public attitudes toward AI technologies: individuals in China reportedly hold more favorable views than their counterparts in the United States. Moreover, the data suggests that male respondents generally express a more positive perception of AI tools and services compared to female respondents (Nestor Maslej L. F., 2024). Artificial Intelligence holds considerable promise across a wide range of societal domains, notably in healthcare, financial services, information technology, education, transport, and ecological surveillance. In healthcare, AI is being applied to a variety of functions, from diagnostic support and customized therapeutic interventions to predictive systems capable of forecasting disease outbreaks and optimizing the allocation of medical resources. The incorporation of AI into health infrastructures is anticipated to refine patient care, streamline clinical workflows, and stimulate the development

of novel therapeutic solutions, including self-monitoring and coaching platforms. Additionally, the adoption of AI is expected to reduce clinical errors and thereby enhance patient safety and outcomes (Chew, 2022).

Within the financial sector, Artificial Intelligence serves an essential function in the domains of fraud mitigation, risk evaluation, and automated trading mechanisms (Cavalcante, 2016).

The Information Technology sector continues to evolve under the influence of AI innovations. These include enhanced natural language processing capabilities that improve user interaction (Khurana, 2023), machine learning algorithms employed for anticipatory threat detection in cybersecurity (Bharadiya, 2023), and predictive systems used to avert technical malfunctions. Further contributions of AI in IT include the automation of code generation and testing, the customization of user experiences, and the adaptation of autonomous IT operations (Fan, 2023)). In addition, AI significantly bolsters data processing, image and voice recognition, and robotic process automation (Li, 2023), collectively increasing efficient operations and a superior user experience across diverse technological contexts.

In the educational area, AI applications encompass adaptive learning environments, intelligent tutoring mechanisms, and the analytical assessment of educational data. Monitoring media sentiment can elucidate societal attitudes toward AI in pedagogy, thereby enabling educational institutions to adapt their strategies to the evolving requirements of learners, educators, and the labor market (Yang, 2022).

AI's influence on transportation is transformative, manifesting in self-driving vehicles, intelligent traffic control systems, and predictive maintenance applications (Tang, 2022). Assessing public sentiment via media discourse is essential for policymakers and transport administrators to address issues surrounding privacy, safety, and the integration of AI into urban infrastructure.

Regarding environmental monitoring, AI supports the analysis of ecological data, the modeling of climatic trends, and conservation initiatives (Himeur, 2022). Sentiment analysis of media content offers insights into public opinion on the ecological applications of AI, which can inform the development of environmentally sustainable technological policies.

In summation, applying sentiment analysis in the context of media narratives surrounding AI constitutes an important technique for apprehending hopes, reservations, and interpretations that are shared to the general public. This understanding is crucial for directing the advancement and integration of AI in ways that align with ethical standards and serve the collective interest.

4.4. AI-related literature

The area of AI-related literature, both in English and Chinese, has seen a pronounced expansion over the past decade (Nestor Maslej L. F., 2023). More precisely, the number of academic works in Computer Science labeled under *Artificial Intelligence* within the Scopus database has surged more than ninefold between 1996 and 2017. While the broader Computer Science field experienced a sixfold increase in publications during the same period, AI-specific research output exhibited a significantly sharper rise (Shoham Y. R., 2017). In this context, Europe consistently emerged as the most prolific contributor, responsible for 28% of AI-related entries in Scopus in 2017. Notably, China demonstrated a steep growth trajectory, with AI paper output expanding by 150% between 2007 and 2017. In 2017, papers categorized under *Machine Learning* and *Probabilistic Reasoning* represented 56% of all AI publications, a substantial jump from 28% in 2010. The rate of publication notably accelerated during the 2014–2017 window compared to 2010-2014 (Tang, 2022). Between 2010 and 2021, the volume of AI-related publications more than doubled, increasing from 200,000 to nearly half a million (Nestor Maslej L. F., 2023).

Focusing to AI journal publications, the output of AI-focused articles in 2020 was 5.4 times higher than that in 2000, with a significant year-on-year growth rate of 34.5%. Furthermore, the proportion of AI journal articles relative to the total global publication volume saw a marked increase of 0.4 percentage points in that year (Zhang D. M., 2021)

With regard to AI conference proceedings, the publication count peaked in 2019 but dropped by approximately 19.4% by 2021, a decline that can likely be attributed to the global interruptions caused by the COVID-19 pandemic, which led to a substantial reduction in face-to-face conferences. Despite this contraction in

absolute numbers, the share of AI-related conference papers within the global corpus of conference publications has risen by more than five percentage points since 2010 (Zhang, Clark, & R., 2022).

Certain subfields have emerged as focal points, notably pattern recognition, machine learning, and computer vision, thereby shaping the broader trajectory of AI development. The intense rise in related publications illustrates not only the growing academic and scientific investment in artificial intelligence but also the increasing diffusion of AI knowledge across global research landscapes.

In 2021, journal articles accounted for the majority of AI-related documents, comprising 60%, followed by conference papers at 17%, and repository submissions at 13%. The remaining 10% encompassed books, book chapters, dissertations, and various other document types. Notably, the number of journal and repository publications expanded significantly over the last 12 years, tripling and increasing by a factor of 26.6, respectively. In contrast, the volume of conference contributions has been in decline since 2019 (Shoham Y. R., 2017). An analysis of AI publication distribution across sectors highlights the academic domain as the principal contributor, responsible for nearly 70% of all outputs. This is followed by non-profit organizations, industry-related entities, and governmental bodies ((Zhang, Clark, & R., 2022).

After a period of modest progress from 2010 to 2015, AI journal publications experienced a notable upswing, expanding approximately 2.3-fold since 2015. This upward trajectory intensified further between 2020 and 2021, with a striking growth rate of 14.8%. This trend reflects a deepening engagement of scholarly communities with the evolving field of artificial intelligence, marking a phase of rapid expansion and innovation (Shoham Y. R., 2018).

The rising frequency of AI journal publications signals a reinforced commitment within the academic scene to disseminate empirical findings, methodological innovations, and theoretical advancements. This pattern aligns with the widespread recognition of AI as a quickly evolving field of inquiry, inducing researchers to contribute to the global repository of AI knowledge (Nestor Maslej L. F., 2023).

The pronounced rise in publication activity between 2020 and 2021 suggests an intensified leap of research production, potentially provoked by the expanding

applicability of AI technologies and the emergent challenges they pose. This upsurge not only underscores the dynamic evolution of AI scholarship but also accentuates the imperative to examine public attitudes toward AI. As artificial intelligence becomes increasingly embedded in various facets of daily life, comprehending societal responses to these transformations becomes essential.

4.5. From Wired Archives to Sentiment Analysis

The beginning of this research required a thoughtful and systematic selection of a media outlet deemed highly pertinent to the analysis. This important phase involved a thorough investigation and comparative evaluation of several digital platforms, with particular emphasis on parameters such as topical relevance, source reliability, and the scope of content coverage. Several outlets were reviewed to determine that the final selection would yield a rich and informative corpus for analytical purposes. Given the study's objective to investigate representation of artificial intelligence in popular media, an initial shortlist was constructed comprising the ten most prominent technology-focused magazines. This list was curated based on online visibility metrics, including audience reach and engagement across social networks. The selected outlets included Wired, Computer World, MIT Technology Review, E&T Magazine, Tech Advisor, Digit Magazine, Tech Briefs, Innovation & Tech Today, Trotons Tech Magazine, and MDPI Technologies, as indicated in Feedspot's media listing (Feedspot, 2024).

Among these, Wired Magazine emerged as the most dominant, exhibiting a markedly higher volume of web interactions and social media activity relative to its peers. Narrowing the focus to Wired thus facilitates consistency in stylistic and editorial norms, giving a cohesive approach through which AI narratives can be examined in a leading tech publication. This targeted approach also provides a solid context for prospective comparative studies that may include a range of media outlets from mainstream to scholarly publications.

This deliberate strategy was intended to connect the study within a media source that both engage actively with ongoing debates in technology and ensures access to a wide range of relevant content. Wired Online Magazine was ultimately chosen as the basis of this research for multiple reasons. Primarily, the publication

enjoys widespread recognition for its authoritative voice in technology and innovation discourse (Statista, 2023). According to the outlet's media press kit, Wired's digital platform attracts over 30 million visitors monthly (Press, 2023). Its readership base comprises not only technology experts but also professionals, and enthusiasts (Statista, 2023). Furthermore, Wired has consistently produced comprehensive content on artificial intelligence: broad investigative reporting, expert commentary, and editorial analysis. Such a extent of material provides a varied depiction of views and cultural sentiments around AI. The diversity of perspectives within both its editorial stance and audience engagement contributes additional value to the dataset (Statista, 2023).

Through the examination of Wired's content, the study seeks to capture vast viewpoints on AI, thereby contributing to a more comprehensive grasp of attitudes in this field. Another compelling factor in Wired's selection was the accessibility of its digital archive, which facilitates a robust and scalable data collection process. Specifically, a search using the tag *artificial intelligence* yielded 4,265 distinct articles published between January 2018 and April 2023. The term was chosen as the primary search query given its direct alignment with the study's focus. This ensured that the retrieved content was substantively related to AI. Despite this focused retrieval method, a possible drawback is the inclusion of texts where AI is mentioned only in passing. To mitigate this, a word count analysis of *artificial intelligence* and its acronym *AI* was performed on each article, providing a metric to determine the centrality of the topic in each case. Another expected constraint lies in the potential omission of specific AI subfields such as machine learning, neural networks, or self-driving technologies. Nevertheless, given that articles are generally categorized with thematic tags, the employed search protocol is likely to yield a set of AI-related articles. The selected timeframe, from 2018 to 2023, encompasses critical phases in AI's evolution, capturing both early developments and contemporary advancements, thereby allowing for a historical examination of shifts in societal engagement and conceptual framing of the concept.

In light of these considerations, Wired Magazine was adopted as the principal source for the content analysis focused on public discourse surrounding AI. A total of 4,265 articles referencing AI were extracted from Wired's online repository spanning the period from January 2018 to April 2023 (Wired, 2023).

Media sentiment analysis typically requires manually coding articles (Natale, 2020) (Martin, 1993). However, given the study's temporal scope and the extensive

dataset involved, manual classification methods proved inadequate due to their inefficiency in processing large volumes of data. Hence, an automated analytical framework was employed, incorporating computational techniques to accelerate and standardize sentiment classification.

The analytical phase utilized the R programming language (Team, 2023), incorporating libraries designed for text mining and sentiment interpretation (Silge J., 2016). Among several lexicon-based sentiment tools, such as AFINN, VADER, SentiWordNet, SentiStrength, and the Liu and Hu lexicon, two were selected based on their superior performance in prior studies: AFINN (Nielsen, 2011) and VADER (Hutto, 2014), as highlighted in a recent study (Al-Shabi, 2020). Employing both tools allowed cross-validation and enhanced methodological consistency. This dual-technique setup enabled a scalable sentiment analysis approach to be applied to a vast corpus of AI-related media content, functioning under a data paradigm that surpassed the limits of traditional review methods.

While Al-Shabi identifies certain limitations in both AFINN and VADER (Al-Shabi, 2020), such as their difficulty in detecting sarcasm, irony, and context-dependent semantics, these issues are mitigated in journalistic writing, where language tends to be more direct and less ambiguous. AFINN calculates sentiment by assigning scores between -5 and +5 to individual tokens, with aggregate sentiment derived from the cumulative sum of these values. Although this method does not account for contextual differences, it is valued for its clarity and computational simplicity. VADER, in contrast, allocates scores from -4 to +4, incorporating contextual cues like punctuation and capitalization to refine sentiment interpretation. This makes it particularly apt for analyzing texts with more complex emotional tones. For comparative purposes, sentiment scores from both lexicons were normalized to a [-1, +1] scale. Figure 4-2 presents a representative output of the dual sentiment analysis method.

Notably, this investigation did not apply topic modeling, a method commonly used to detect latent themes within textual corpora. Instead, the articles were treated as reflective of broader narratives concerning AI, emphasizing overarching thematic coherence rather than isolated keywords.

Each article received a *positive score* and a *negative score* from both lexicons, which were used to compute an overall sentiment score by summing the positive

and negative values algebraically. Articles were categorized as *positive*, *negative*, or *neutral* based on whether their overall score was above, below, or equal to zero. To explore temporal patterns in sentiment expression, monthly averages of positive and negative scores were analyzed through linear regression for each method.

Additionally, a frequency analysis of the expressions *artificial intelligence* and *AI* was conducted across the dataset. This enabled a further classification of the articles according to the degree of emphasis placed on the subject, thereby refining the corpus for interpretative analysis.

VADER_Positive_Score	VADER_Negative_Scor	VADER_overall_score	VADER_Overall_Sentiment	AFINN_Positive_Score	AFINN_Negative_Score	AFINN_overall_score	AFINN_Overall_Sentiment
30,8	-9,7	21,1	positive	27	-10	17	positive
37,5	-41,2	-3,7	negative	25	-35	-10	negative
21,5	-16,9	4,6	positive	19	-16	3	positive
53,6	-26,3	27,3	positive	50	-27	23	positive
61,7	-27,9	33,8	positive	55	-29	26	positive
20,8	-7,9	12,9	positive	19	-7	12	positive
90,3	-24,3	66	positive	80	-28	52	positive
49,5	-22,8	26,7	positive	42	-30	12	positive
59	-2,3	56,7	positive	51	-2	49	positive
87,7	-15,2	72,5	positive	74	-14	60	positive
140,5	-177,1	-36,6	negative	81	-161	-80	negative
40,4	-67,8	-27,4	negative	38	-67	-29	negative
51,6	-11,1	40,5	positive	48	-12	36	positive
28,4	-10,3	18,1	positive	18	-6	12	positive
141	-20,8	120,2	positive	140	-23	117	positive
36,5	-26,9	9,6	positive	23	-23	0	neutral
41,4	-14,2	27,2	positive	38	-18	20	positive
76,1	-28,9	47,2	positive	49	-23	26	positive
61,3	-17,4	43,9	positive	54	-20	34	positive
151,3	-118,9	32,4	positive	124	-123	1	positive
164,6	-441,9	-277,3	negative	151	-424	-273	negative
60,1	-13,8	46,3	positive	37	-11	26	positive
177,8	-227	-49,2	negative	164	-189	-25	negative
232,7	-174,7	58	positive	180	-175	5	positive
93,4	-19,1	74,3	positive	77	-20	57	positive
59	-94,4	-35,4	negative	39	-64	-25	negative
32,3	-14,6	17,7	positive	15	-18	-3	negative
46,1	-17	29,1	positive	37	-21	16	positive
65,3	-33,3	32	positive	46	-33	13	positive
50,5	-13	37,5	positive	47	-20	27	positive
15,2	-8,7	6,5	positive	12	-8	4	positive
39,5	-4,1	35,4	positive	32	-11	21	positive
87	-124,9	-37,9	negative	86	-108	-22	negative
237,3	-167,7	69,6	positive	214	-164	50	positive
12,3	-3,8	8,5	positive	7	-3	4	positive
74	-9,3	64,7	positive	82	-14	68	positive
80,8	-20,7	60,1	positive	75	-18	57	positive

Figure 4-2 . Example of score of articles with both techniques. **Source: (Moriniello F. M.-T., 2024)**

4.6. Frequencies, Sentiments, and Trendlines

The first findings from this research indicate that a quarter of the reviewed articles lacked any reference to the main expressions: *artificial intelligence* or *AI*.

Additionally, 29% of the articles contained only a single mention of these terms, while another 25% included two to four occurrences. The remaining 20% referred to *artificial intelligence* or *AI* more than four times. Based on these frequencies, the corpus was segmented into four distinct categories: *NoMention, LowMention, Mention*, *StroMention* (see Figure 3).

This categorization facilitated an exploration of the depth of engagement with AI-related content within Wired Magazine's coverage, allowing for a deeper understanding of how the topic is addressed. One of the most striking outcomes was that nearly a quarter of the articles tagged with *artificial intelligence* did not contain an explicit mention of the term. This phenomenon could potentially be ascribed to either the overapplication of the AI tag or a preference within Wired's editorial practices for employing more targeted vocabulary that aligns with article-specific content. The absence of direct references invites a study into the appropriateness of labeling such content under the AI theme, especially when the term may be either irrelevant or employed in a vague manner. This result resonates with the concept of *tag spamming*, whereby excessive or loosely relevant tags are appended to digital content to enhance visibility or influence search engine optimization (Heymann, 2007).

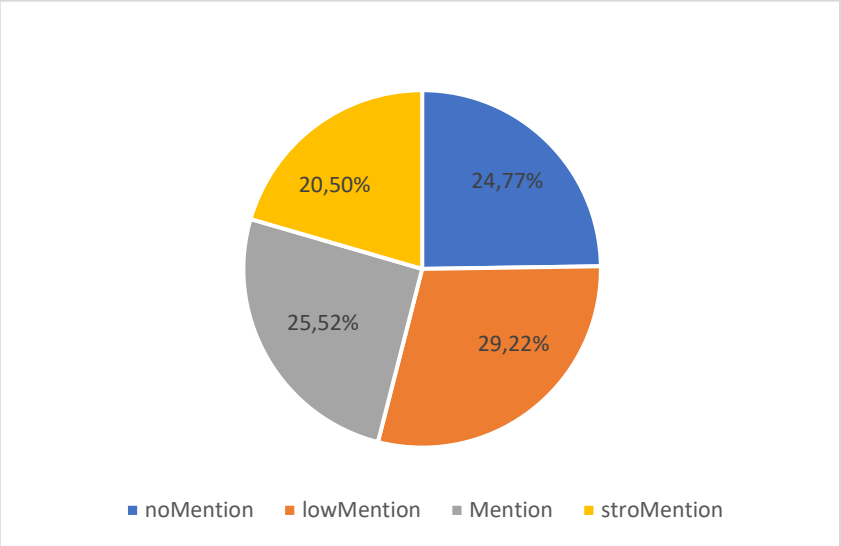

Figure 4-3 Proportional distribution of articles by frequency of reference to Artificial Intelligence (NoMention = 0 times; LowMention = 1 time; Mention = 2–4 times; StroMention = more than 4 times).Source: (Moriniello F. M.-T., 2024).

Nevertheless, it must be acknowledged that all articles included in this investigation were classified by Wired under the *artificial Intelligence* category, with the AI tag having been assigned editorially. Therefore, the lack of explicit usage of *AI* or *artificial intelligence* within the body of text may be more accurately interpreted as an editorial decision to utilize more precise, domain-specific terminology. To test this assumption, an auxiliary analysis was carried out to identify the presence of alternative terms closely associated with AI. The vocabulary set employed included: *Machine Learning, Deep Learning, Neural Networks, Natural Language Processing, Cognitive Computing, Computer Vision, Reinforcement Learning, Predictive Analytics, Generative Adversarial Network, GANs, Bot, Chatbot, Supervised Learning, Unsupervised Learning, Decision Trees, Support Vector, Natural Language Generation, Autonomous Vehicles, Expert Systems, Fuzzy Logic, Bayesian Networks, Evolutionary Algorithms, Swarm Intelligence, Knowledge Representation, and Transfer Learning.*

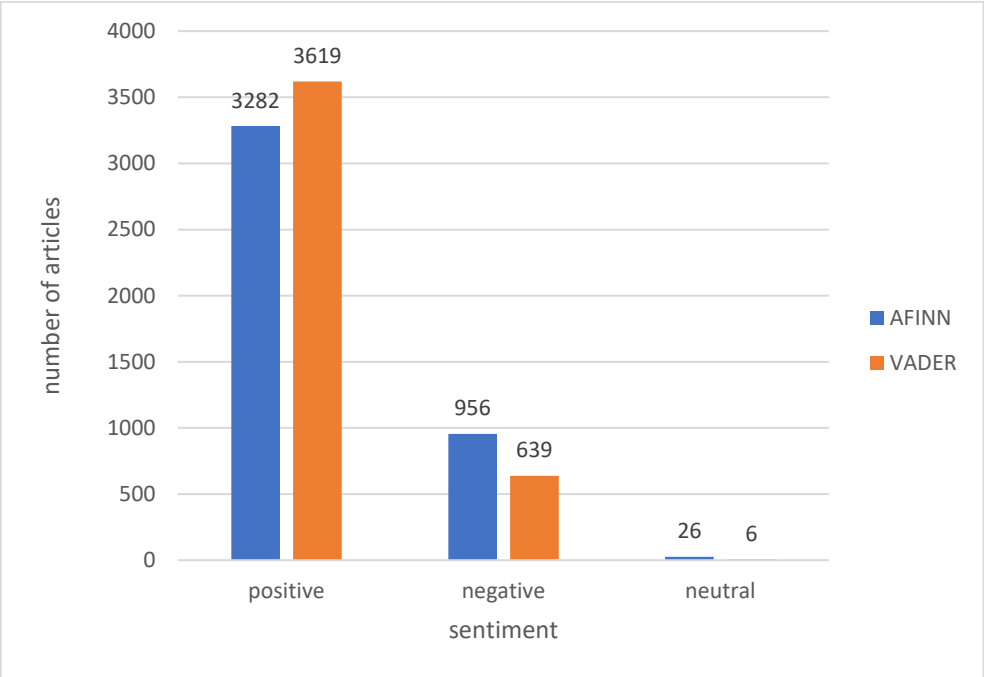

Figure 4-4 Distribution of Overall Sentiment in Wired Magazine Articles on Artificial Intelligence, obtained using AFINN and VADER techniques. Source: (Moriniello F. M.-T., 2024).

The outcome of this secondary investigation indicated that only 6% of the articles did not include any of the aforementioned terms. It remains plausible that these pieces employed other AI-relevant terminology that was not encompassed by this list. To preserve methodological clarity, these articles were allocated to the *NoMention* group and excluded from the main body of the thematic analysis. This separation was maintained to identify potential discrepancies in coverage and sentiment trends across the defined categories. The results suggest that articles lacking general terms like AI often adopt more specialized lexicon, reflecting a higher degree of technical specificity. Importantly, the application of the Artificial Intelligence tag by Wired appears to serve navigational and user-assistance purposes, aiding readers in locating content associated with AI. Thus, despite the absence of explicit terminology, these articles were retained within the study as they contribute to shaping reader perceptions of the field. Nonetheless, analytical distinctions between the categories will be preserved to delineate their respective contributions to the discourse.

Sentiment evaluation of the Wired articles revealed a general tendency toward favorable representations of artificial intelligence, as illustrated in Figure 4-4. Nonetheless, instances of negative sentiment were also identified, underscoring the presence of diverse viewpoints within the dataset (see Figure 4-4).

The outcomes derived from both AFINN and VADER sentiment evaluations demonstrate a positive correlation between the frequency of the terms *artificial intelligence* and *AI* and the level of positive sentiment conveyed in the articles, as illustrated in Figure 4-5 and Figure 4-6. This trend suggests that broader or more generic usage of these terms tends to be associated with more favorable sentiment expression.

Conversely, articles that omit direct references to *artificial intelligence* or *AI* and instead employ more specialized vocabulary tend to exhibit a balance of both affirmative and critical sentiments (Figure 4-5 and Figure 4-6). This pattern implies that articles delving into technical or nuanced dimensions of AI are more likely to articulate evaluative or skeptical viewpoints.

A consistent observation across the analyses is that AFINN produces a lower volume of positively classified articles and a higher incidence of negative ones when compared to VADER. This divergence can be attributed to fundamental

methodological differences between the two sentiment detection systems. AFINN employs a basic lexicon-based mechanism, which may overlook subtle sentiment-enhancing cues, such as intensifiers, negations, or syntactic nuances. In contrast, VADER integrates a more advanced rule-based algorithm that interprets such contextual modifiers and linguistic variations (Nielsen, 2011) (Hutto, 2014). As a result, VADER tends to yield higher positive sentiment scores, capturing subtle linguistic features that AFINN may miss.

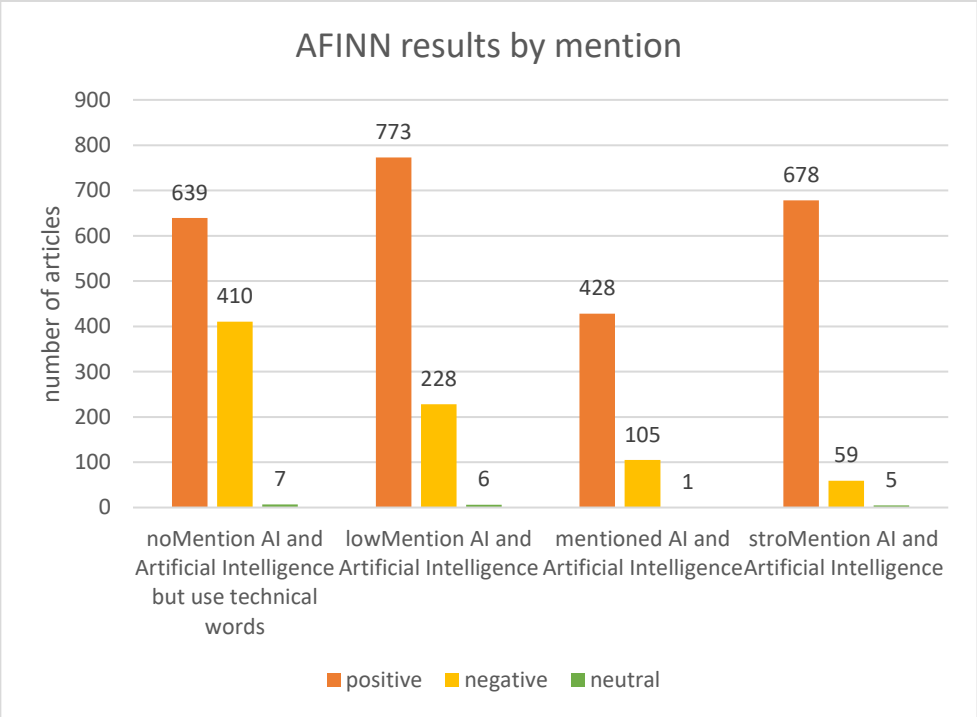

Figure 4-5 Distribution of Overall Sentiment per category of mention in Wired Magazine Articles on Artificial Intelligence, obtained using AFINN technique. Source: (Moriniello F. M.-T., 2024).

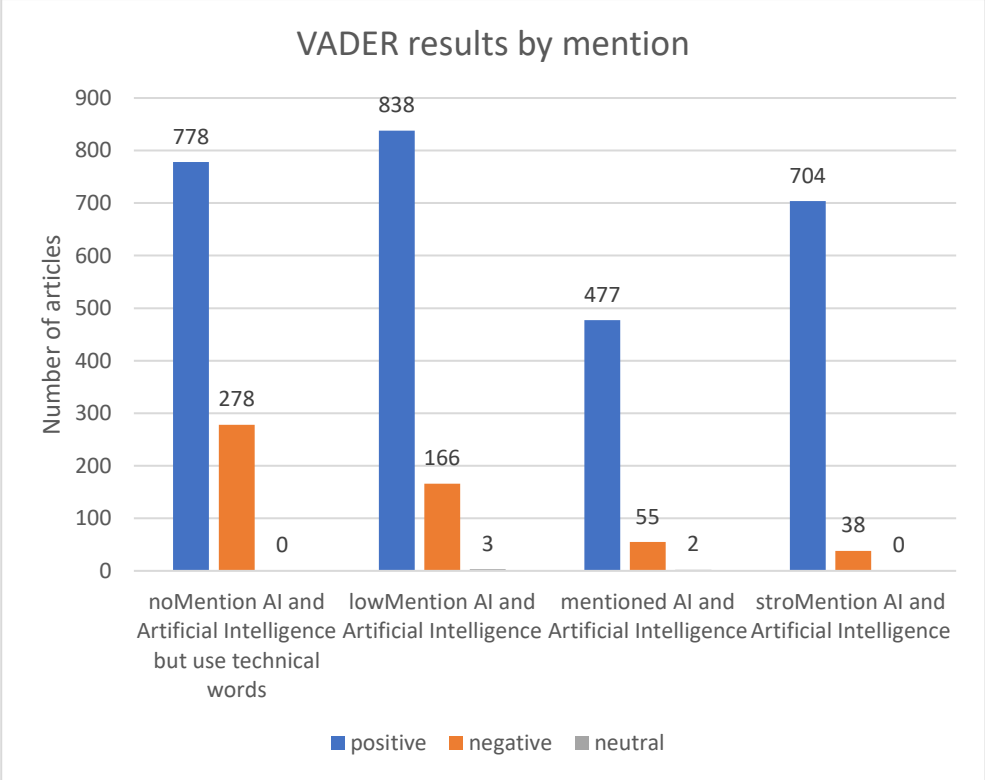

Figure 4-6 Distribution of Overall Sentiment per category of mention in Wired Magazine Articles on Artificial Intelligence, obtained using VADER technique. Source: (Moriniello F. M.-T., 2024).

To assess temporal dynamics in sentiment, monthly averages of positive and negative scores were calculated. For each month, all individual positive sentiment values were aggregated and divided by the number of published articles during that time period; the same method was applied to negative sentiment. These computations were carried out for the full dataset as well as for each mention-based subgroup. The results are visualized in the following figures:

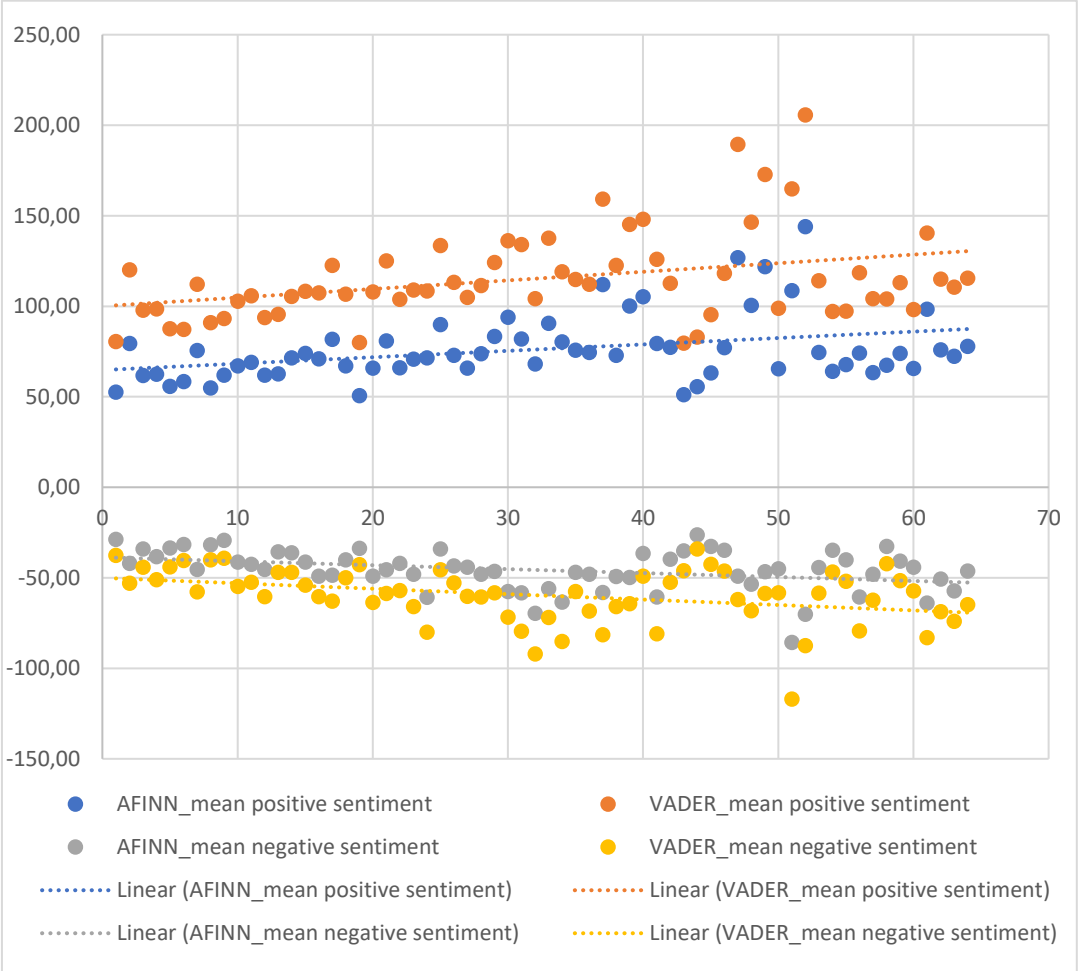

Figure 4-7 Mean positive and negative score per month from January 2018 to April 2023 (64 months). The scale ranges of VADER [-4, +4] and AFINN [-5, +5] were adjusted to a unified scale of [-1, +1]. Source: (Moriniello F. M.-T., 2024).

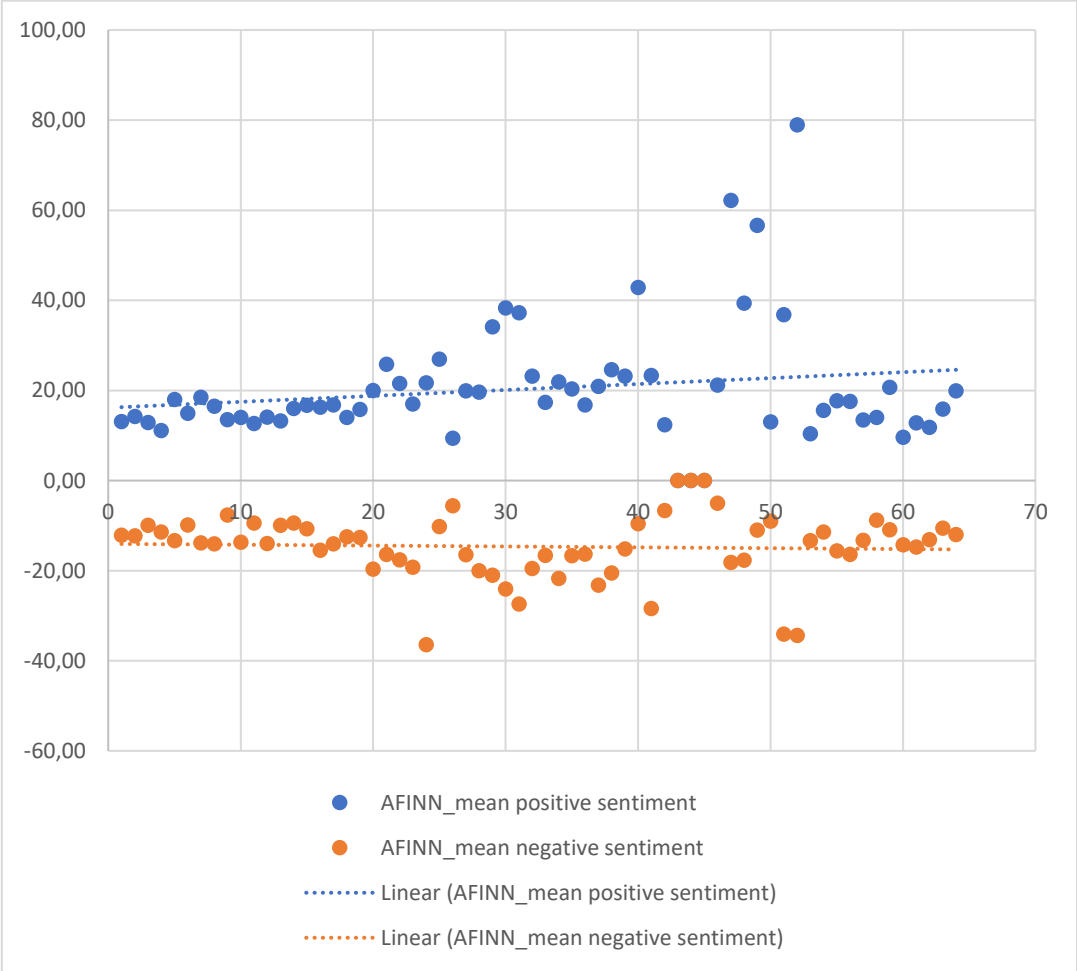

Figure 4-8 AFINN Mean positive and negative score per month within the category *noMention* from January 2018 to April 2023 (64 months). The scale ranges of AFINN [-5, +5] was adjusted to a unified scale of [-1, +1]. Source: (Moriniello F. M.-T., 2024).

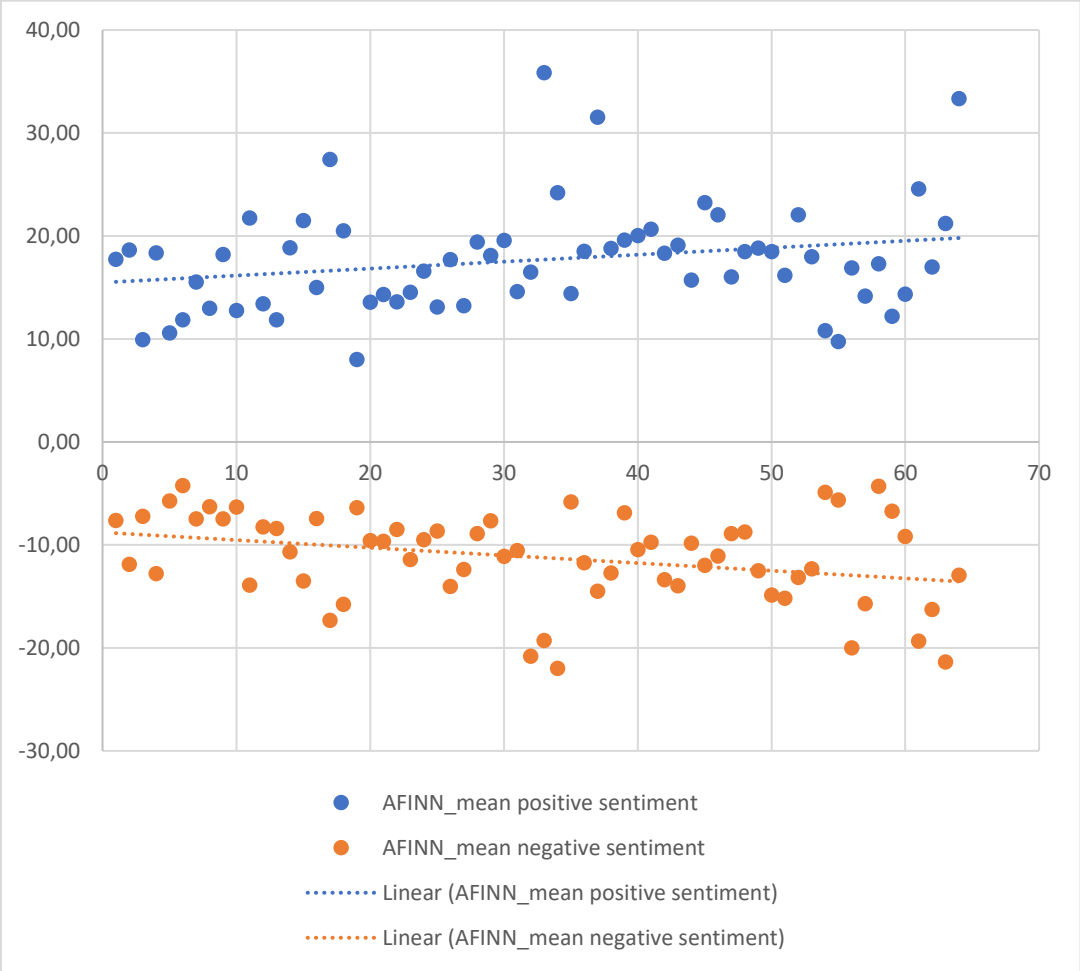

Figure 4-9 AFINN Mean positive and negative score per month within the category *LowMention* from January 2018 to April 2023 (64 months). The scale range of AFINN [-5, +5] was adjusted to a unified scale of [-1, +1]. Source: (Moriniello F. M.-T., 2024).

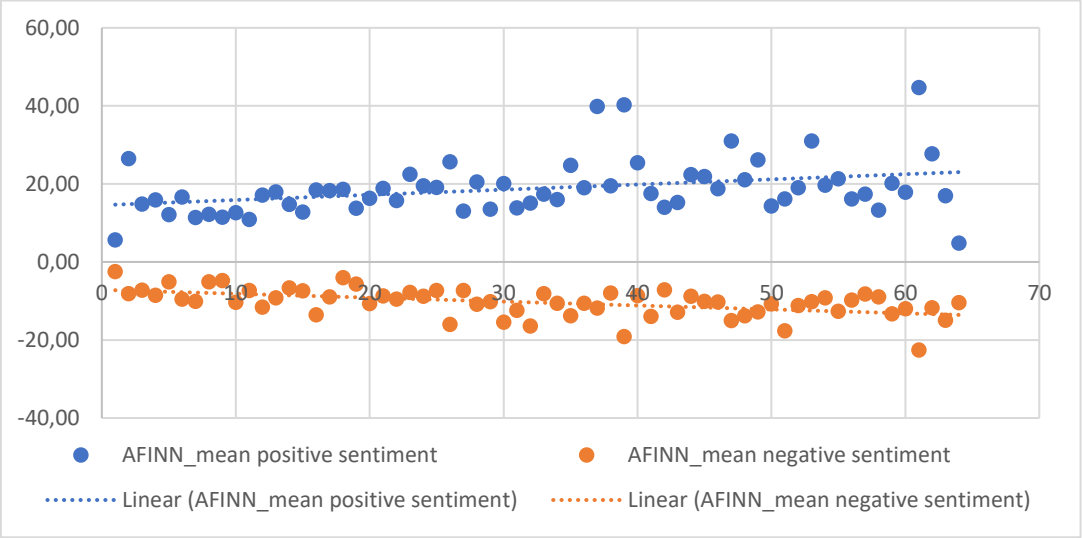

Figure 4-10 AFINN Mean positive and negative score per month within the category *Mention* from January 2018 to April 2023 (64 months). The scale range of AFINN [-5, +5] was adjusted to a unified scale of [-1, +1]. Source: (Moriniello F. M.-T., 2024).

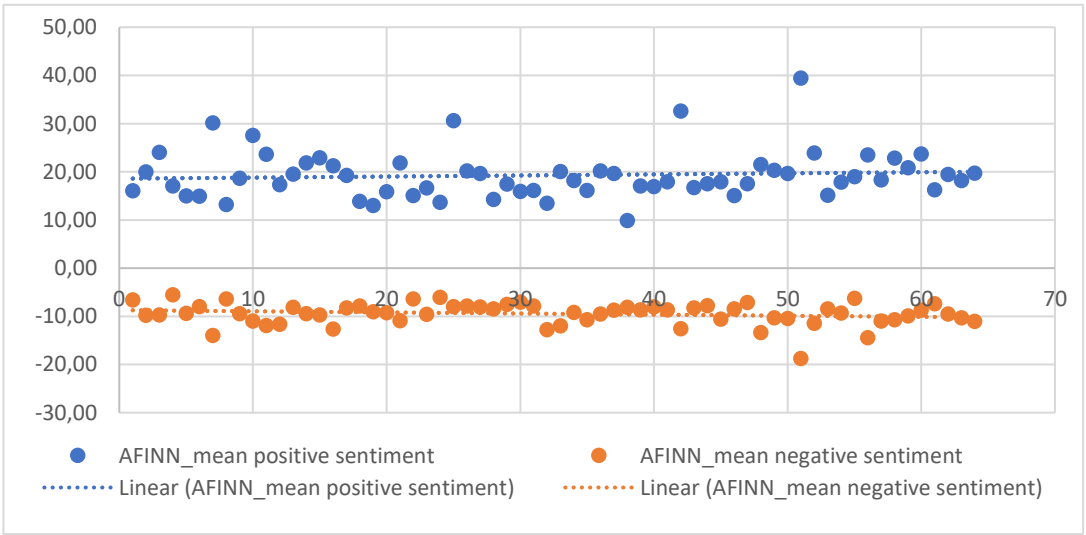

Figure 4-11 AFINN Mean positive and negative score per month within the category *stroMention* from January 2018 to April 2023 (64 months). The scale range of AFINN [-5, +5] was adjusted to a unified scale of [-1, +1]. Source: (Moriniello F. M.-T., 2024).

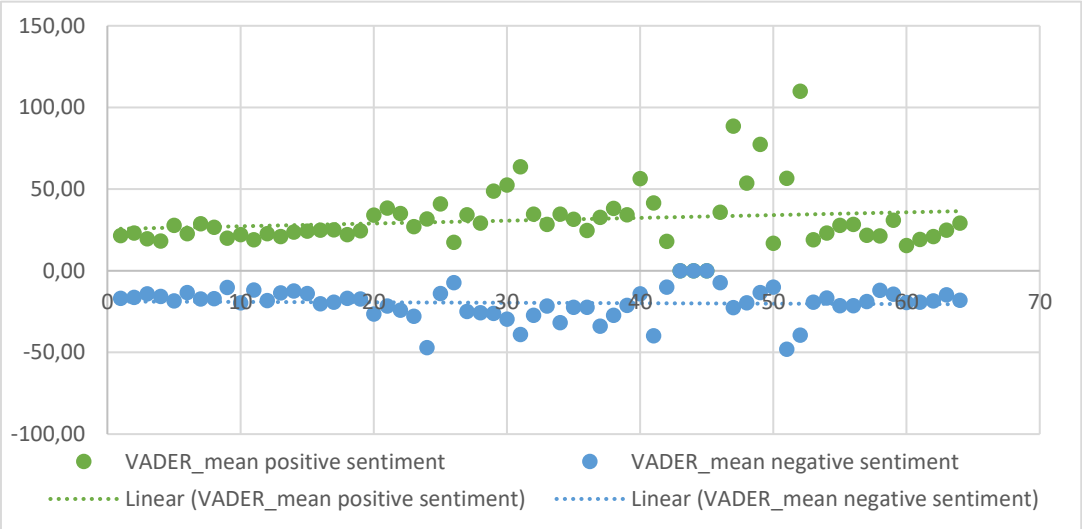

Figure 4-12 VADER Mean positive and negative score per month within the category *NoMention* from January 2018 to April 2023 (64 months). The scale range of VADER [-4, +4] was adjusted to a unified scale of [-1, +1]. Source: (Moriniello F. M.-T., 2024).

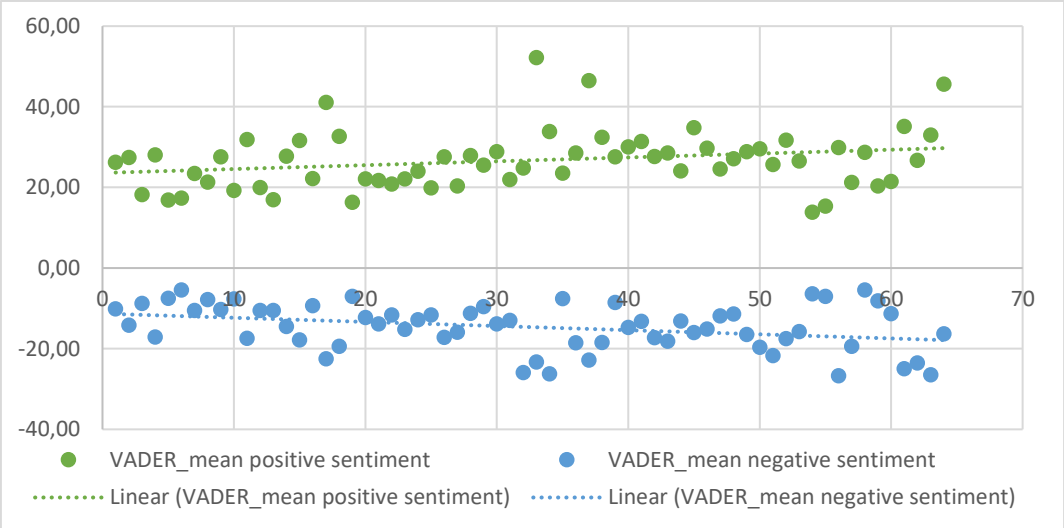

Figure 4-13 VADER Mean positive and negative score per month within the category *lowMention* from January 2018 to April 2023 (64 months). The scale range of VADER [-4, +4] was adjusted to a unified scale of [-1, +1]. Source: (Moriniello F. M.-T., 2024).

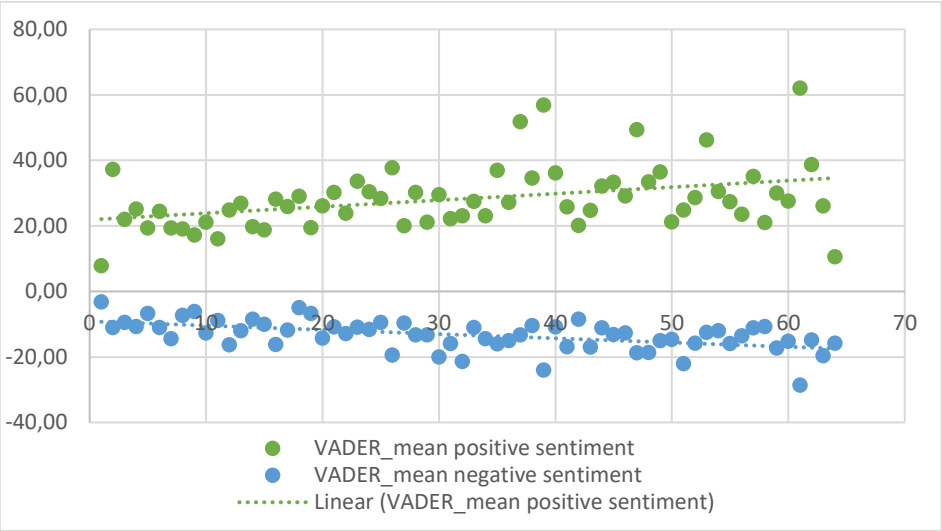

Figure 4-14 VADER Mean positive and negative score per month within the category *Mention* from January 2018 to April 2023 (64 months). The scale range of VADER [-4, +4] was adjusted to a unified scale of [-1, +1]. Source: (Moriniello F. M.-T., 2024)**.**

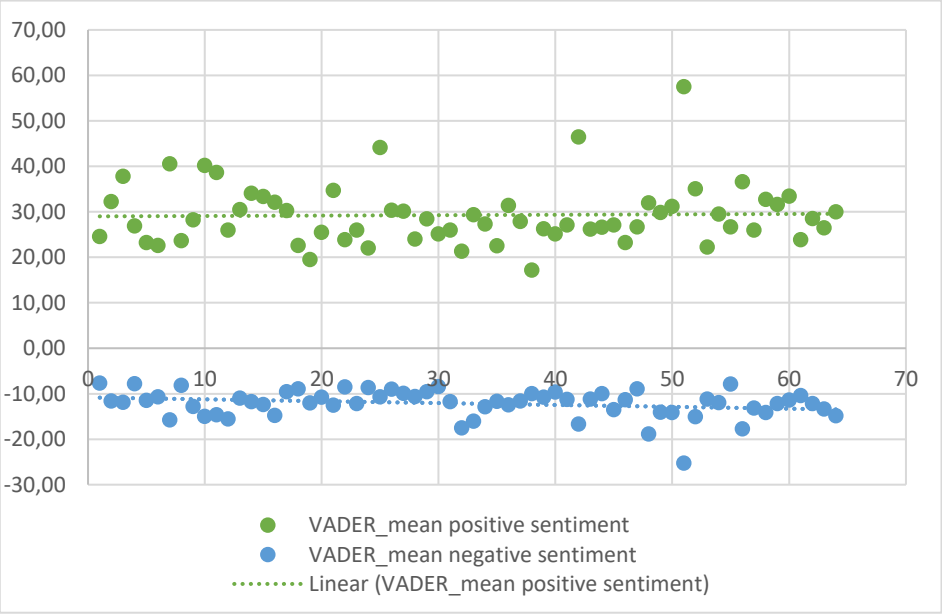

Figure 4-15 VADER Mean positive and negative score per month within the category *stroMention* from January 2018 to April 2023 (64 months). The scale range of VADER [-4, +4] was adjusted to a unified scale of [-1, +1]. Source: (Moriniello F. M.-T., 2024)**.**

When considering the aggregated data across the entire corpus, both sentiment analysis techniques reveal a general rise in positive sentiment and a decline in negative sentiment over time. However, category-specific evaluations reveal several distinctions. In the *NoMention* group, a progressive increase in positive sentiment is observed, while negative sentiment levels remain comparatively stable. For the *StroMention* articles, both positive and negative scores demonstrate a steady trend without significant variation. Articles in the *Mention* and *LowMention* categories show a marked increase in positivity accompanied by a reduction in negativity. These general tendencies are mirrored across both analytical tools, AFINN and VADER.

The application of linear regression models across all categories and methods indicates a trajectory toward more extreme sentiment polarizations. These findings suggest that the tone of AI-related media coverage is becoming more distinctly divided over time.

Noticeable trends in sentiment values appear in Figures 4-8, 4-9, 4-10, 4-11. 4-12, 4-13, 4-14, 4-15, which are consistent between the two sentiment analysis techniques for the same categories. These variances are expected, considering that sentiment analysis inherently reflects human emotional variability, which is not uniformly distributed. Such outliers are a natural manifestation of the temporal fluctuations in the media's framing of AI. The concurrence of these outliers in both AFINN and VADER outputs for particular time frames suggests that these are not methodological artefacts, but rather legitimate spikes in emotional tone, either enthusiastic or critical, likely tied to salient events or technological breakthroughs. Instances of extreme sentiment may stem from intensified media coverage that emphasizes either the transformative promise or the perceived risks of specific AI innovations. This oscillation in tone may reflect common journalistic tendencies to amplify either the optimism or the controversy surrounding emerging technologies. A more focused investigation is recommended to complement these observations and further contextualize the drivers behind these sentiment peaks.

4.7. Interpreting Wired's Optimism and Underlying Critiques

The patterns observed in Figure 4-5, Figure 4-6, Figure 4-7 suggest that journalists contributing to *Wired* Magazine may generally express a favorable orientation towards artificial intelligence, while simultaneously revealing that the publication does not entirely avoid critical engagement with the subject. This juxtaposition of affirmative and skeptical sentiment illustrates the multifaceted and intricate discourse surrounding AI within the magazine's content. The findings point to a predominance of positive sentiment throughout the articles, suggesting an overall optimistic framing of AI. This is consistent with the prevailing enthusiasm that characterizes portrayals of AI within both the technology sector and mainstream media outlets (Campolo, 2017).

Nonetheless, the data also reveals that articles in which AI is not directly named are more likely to contain critical or cautionary perspectives. This may imply that authors feel greater latitude to voice reservations or concerns when AI is not the explicit thematic focus. Such an observation should not be interpreted to mean that *Wired*'s coverage lacks critical depth or presents AI in an uncritically laudatory manner. Rather, it indicates that while the general tone is positively inclined, critical viewpoints are embedded in more subtle or context-sensitive discussions. This observation underscores the necessity of encouraging a balanced approach in AI discourse, one that considers both potential opportunities and associated risks. Moreover, it highlights the need for precise and unambiguous language to avoid miscommunication or oversimplification of complex issues.

The trajectory of sentiment uncovered through this investigation illustrates a dynamic interplay between media representation and public sentiment. As a prominent outlet at the intersection of technological innovation and public communication, *Wired* applies substantial influence over the perspectives of the general readership but also industry professionals and decision-makers. The distribution of sentiment, ranging across positive, negative, and neutral expressions, offers a comprehensive lens through which the evolving public discourse on AI's promises, risks, ethical dimensions, and broader societal impacts can be discerned.

Relevant findings from Chuan, Tsai, and Cho offer a contrasting perspective (Chuan, 2019. Their analysis of AI coverage in mainstream U.S. media sources noted a rising trend of skepticism, particularly in relation to ethical challenges and labor market disruptions. This divergence from the present study's results leads to a possible shift in tone across different media ecosystems or editorial orientations.

Complementing this viewpoint, Whittlestone emphasizes the influence of media narratives in shaping public understanding and guiding informed discourse about AI. Their conclusions align with the current study's aims, reaffirming the critical role media plays in mediating public reflection on AI's broader societal consequences (Whittlestone, 2019).

Furthermore, Müller and Bostrom underscore the importance of gauging public sentiment in the context of AI's progressive integration into daily human experience (Müller, 2016). They argue that understanding societal attitudes is essential for shaping ethical policies and fostering responsible technological advancement. This reinforces the significance of sentiment analysis in guiding both academic inquiry and policy deliberation.

The initial outcomes of this investigation offer foundational insights into the media's depiction of AI, contributing to the expanding body of literature on how artificial intelligence is framed and understood by the public. These insights help contextualize broader public attitudes, awareness, and engagement with AI technologies as reflected through journalistic narratives ((Nestor Maslej L. F., 2023) (Natale, 2020) (Shoham Y. R., 2017) (Shoham Y. R., 2018) (Shoham Y. R., 2019) (Garvey, 2020) (Rainie L. C., 2022). The results from this study reinforce existing trends documented in prior analyses ((Shoham Y. R., 2017) (Shoham Y. R., 2018) (Shoham Y. R., 2019) (Garvey, 2020), all of which point to a consistent pattern of optimism in AI-related media coverage. Within the context of *Wired*, this pattern persists, with positive sentiment dominating the representation of AI. This prevailing optimism reflects broader narratives that celebrate technological progress and innovation in the field.

The cumulative findings emerging from the reviewed literature emphasize the multifaceted and intricate public discourse surrounding artificial intelligence. Nevertheless, it is critical to acknowledge the evident dichotomy in public sentiment towards AI, as a substantial body of scholarly work points to a

predominantly skeptical or negative perception among the general populace (Nestor Maslej L. F., 2024) (Nader, 2022) (Owsley, 2024) (Brauner, 2023) (Gerlich, 2023) (Rainie L. , 2022). This contrast brings into focus the tension between popular attitudes and the portrayals disseminated by media institutions, thereby raising pertinent questions regarding the influence of legacy media platforms, such as *Wired* Magazine, on shaping public opinion.

It is equally important to consider that many of the academic contributions reviewed within this study were authored by individuals with expertise in artificial intelligence, which may introduce a degree of bias. Such a bias could skew representations toward more optimistic interpretations, potentially diverging from broader societal views.

Moreover, the role of entertainment media in constructing AI narratives cannot be overlooked. These portrayals often oscillate between casting AI as a dangerous adversary or a promising ally, with a prevailing tendency toward the former (Nader, 2022). Public encounters with AI in everyday contexts, further increased by demographic variables such as ethnicity, add complexity to individual perceptions. The variety of public attitudes spans from cautious optimism to deep skepticism, often hinging on the degree of trust in technological progress (Owsley, 2024) (Brauner, 2023). These studies research into these distinctions, noting that public attitudes are shaped by an interplay of trust, risk assessment, and broader societal values. Their findings highlight how trustworthiness, perceived safety, and the adequacy of governance frameworks serve as pivotal factors influencing acceptance. For some, AI embodies a harbinger of risk, while for others, it represents an opportunity for transformative advancement (Gerlich, 2023). These insights collectively illustrate that public opinion toward AI is highly differentiated, contingent on both individual dispositions and contextual societal dynamics.

The findings reviewed suggest that public sentiment toward AI is characterized by ambivalence, a mixture of apprehension and cautious hopefulness, underscoring the need for future scholarship to further investigate the countless factors that influence such perspectives. Although the current analysis reveals a predominantly positive sentiment within the confines of a single media outlet, a broader contextualization is necessary to fully understand the public discourse on AI. Accordingly, future studies should aim to explore the divergence of sentiment

across various media sources, deploying comparative and cluster analyses to identify thematic domains where opinions may be particularly polarized.

Subsequent studies might also examine how perceptions vary across different demographic layers, or alternatively, assess attitudes among AI professionals through targeted surveys. Addressing these research gaps would contribute to a more holistic understanding of how AI is perceived and discussed in contemporary media landscapes.

Trends identified over time within this study further illuminate evolving attitudes. As evidenced in Figure 4-7, average positive sentiment scores have generally increased, suggesting a growing enthusiasm for AI technologies. Conversely, negative sentiment scores also show an upward trajectory, indicating a parallel intensification of critical perspectives. This duality may reflect the increasing societal entrenchment of AI and the clearer visibility of both its promises and difficulties. As the implications of AI become more pronounced, public discourse gravitate towards more polarized positions. Those inclined toward optimism may become more fervently supportive, while skeptics may articulate their concerns with greater urgency.

Media dynamics may also exacerbate this polarization. News outlets, driven by engagement metrics, may disproportionately amplify provocative or extreme views, contributing to a sense of division in the public sphere. Hence, the polarization of sentiment within AI-related discourse may be understood as the product of an connected set of factors, including technological developments, societal responses, and editorial strategies within media reporting.

These conclusions lay a foundation for future research and practice. In the realm of policymaking, the findings suggest that the critical tone of more technically detailed publications should be accounted for when assessing media influence on public attitudes toward AI. In the educational sphere, these insights may inform the development of curricula involving AI, recognizing that student perceptions are likely to be shaped by the tone and depth of the media sources they engage with, whether from popular or more specialized publications.

4.8. Implications, Lessons, and a Closing Reflection

The results derived from this investigation yield important insights with notable implications for both professionals and, eventually, policymakers engaged in the development and implementation of artificial intelligence. The consistently positive framing of AI found within *Wired* Magazine, contrasted with the predominantly negative public sentiment reported in other studies, highlights the urgent necessity for transparent communication and ethically grounded practices in the development and deployment of AI systems. As societal attitudes toward AI continue to evolve, recognizing and interpreting these trends is essential for guiding policymakers. This understanding enables the anticipation of public apprehensions and facilitates the design of responsive measures that address the increasingly polarized views portrayed within media narratives.

Furthermore, the analysis of term frequency within the dataset reveals a notable pattern in how media outlets selectively appropriate AI-related terminology. A significant proportion of the articles analyzed appear only tangentially related to artificial intelligence, suggesting that the invocation of AI-related language may at times function more as a rhetorical device to attract readership by capitalizing on the subject's contemporary relevance and controversial appeal. These recurrent themes, while sometimes misaligned with the substantive content, provide useful indicators for educators and practitioners in tailoring their communication strategies. They also point to the importance of aligning public engagement efforts with the actual concerns and misconceptions that arise from such media framing.

In summary, as artificial intelligence increasingly intersects with multiple dimensions of social, economic, and cultural life, it becomes imperative to interrogate and understand the narratives that frame public discourse around the technology. The present study underscores the influential role of media in shaping these narratives and calls for an informed, equitable, and transparent dialogue regarding AI's evolving place in human society. It serves as a critical reminder of the responsibility shared by media, policymakers, and AI practitioners to foster a well-informed public capable of engaging thoughtfully with the promises and challenges of artificial intelligence.

5
AI Perception Among Art and Design University Students: A Survey

A portion of this chapter was published in October 2023 in the ICERI2023 Proceedings, co-authored with Professor A. Martí Testón, D. Silva, Professor J. Climent Ferrer, and Professor A. Muñoz, under the title *Exploring Bachelor's Students' Perception of Artificial Intelligence Text-To-Image Generators in Fine Arts and Design* (Testón, 2023). The publication was presented as a conference paper at the 16th Annual International Conference of Education, Research and Innovation, held in Seville, Spain, from November 13th to 15th, 2023.

5.1. Frame of the Debate

The advent of generative AI, particularly in the domain of visual culture, may introduce profound transformations in the ways creativity, authorship, and aesthetics are conceptualized and practiced. Generative AI tools such as DALL·E, Midjourney, and Stable Diffusion enable the automatic generation of highly realistic or stylized images from textual prompts, which could effectively modify the

relationship between the creator and the artifact. This technological shift raises critical questions about the nature of creative agency, the role of the artist, and the future of visual literacy (Elgammal, 2019; McCormack, 2019)

From a philosophical and ethical standpoint, scholars argue that the widespread deployment of generative AI necessitates a redefinition of moral responsibility, especially when creative decisions are outsourced to algorithmic systems (Floridi, 2023). Similarly, scholars in media studies have highlighted how such technologies challenge conventional understandings of originality and authorship (Manovich L. , AI Aesthetics, 2018) (Crawford K. , The atlas of AI: Power, politics, and the planetary costs of artificial intelligence. , 2021). The integration of AI into artistic production, rather than replacing the human creator, introduces a form of hybrid authorship that complicates both aesthetic valuation and intellectual property (Boden, 2004) (McCormack, 2019).

Moreover, the data-driven nature of these systems raises concerns regarding ethical transparency, dataset provenance, and cultural bias. Many generative AI models are trained on massive datasets scraped from the internet, often without clear consent from original content creators. As Crawford and Paglen have argued, these datasets may perpetuate dominant aesthetic norms, reinforce mass cultural stereotypes, and marginalize non-Western artistic expressions. In this context, the use of generative AI in artistic and educational settings cannot be disentangled from larger debates about data ethics, algorithmic accountability, and sociotechnical inequality (Crawford & Paglen, 2021).

Beyond the realm of aesthetics and authorship, the implications of generative AI extend into broader socio-cultural and cognitive dimensions. On the one hand, AI tools offer promising opportunities for creative exploration, educational support, and accessibility (Tavakoli, 2022), particularly for individuals with disabilities or limited artistic training. On the other hand, there are widespread concerns that such tools may diminish manual and conceptual skills, contribute to a devaluation of human labor, and undermine traditional forms of cultural production (Salari, 2025). These concerns are echoed in public discourse, where fears about job displacement and the authenticity of AI-generated content frequently surface (Burke K. , 2024) (Donelli, 2024).

Crucially, the degree to which societies are prepared to engage with these technologies in an informed, critical, and ethical manner remains an open question (Buckingham, 2019). Studies in digital literacy and media education indicate that while younger populations are often highly exposed to AI tools, they may lack the critical frameworks necessary to evaluate their outputs and implications (Gu, 2025) (Veldhuis, 2024). The development of AI literacy, understood not only as technical competence but also as ethical and cultural awareness, is thus increasingly essential.

In this context, the present study aims to investigate perceptions of generative AI among university students in the Arts and Design disciplines to track evolving perceptions of AI in creative and educational contexts. These students represent a demographic particularly fitted at the intersections of creativity, technology, and cultural critique. Drawing on survey data collected in 2023, 2024, and 2025, this research explores how perceptions of AI's impact on creativity, authorship, aesthetics, and social readiness have evolved. By integrating both quantitative metrics and qualitative commentary, the study seeks to contribute to a further understanding of how future creative professionals engage AI-generating tools.

5.2. Design of the Survey

The study involved participants from an academic institution - UPV Universidad Politecnica de Valencia (Spain), with students enrolled in Art and Design-related disciplines. Over the course of three consecutive academic years - 2023, 2024, and 2025 - a total of 265 valid responses were collected - 82 in 2023, 90 in 2024, and 93 in 2025. The participant pool predominantly consisted of individuals aged 18 to 25, representing a demographically coherent group in terms of educational background, cultural exposure, and digital familiarity.

Data were collected using a structured questionnaire which included:

a) Closed-ended items based on Likert-scale formats (ranging from *Strongly disagree* to *Strongly agree* and *Very negative* to *Very positive* with corresponding numerical values from 1 - negative - to 5 - positive),

b) Multiple-choice questions concerning prior knowledge, interest levels, and their views on authorship attribution in the context of AI-generated artworks,
c) Open-ended item that invited respondents to share additional reflections on generative AI.

The survey was administered digitally using institutional platforms, ensuring anonymity and compliance with ethical research protocols. All participants provided informed consent and participation form explaining the purpose, procedures, risks, and rights associated with the study, before engaging in the questionnaire, and no personal identifiers were collected in the data processing phase.

In particularly it was specified that The project researchers commit to adhering to the *Ethics Guidelines for Trustworthy AI* established by the European Commission's High-Level Expert Group on Artificial Intelligence (Commision, 2019) and the directives outlined in the *White Paper on Artificial Intelligence: a European approach to excellence and trust* by the European Commission (Commission, White Paper on Artificial Intelligence: a European approach to excellence and trust, 2020). Furthermore, it was clearly stated that participation in the study was entirely voluntary, and that participants had the right to withdraw at any time without facing any negative consequences. It was also explicitly clarified that taking part in the research would have no impact on course grading. The survey was distributed at the end of each academic class, following the same structure to allow for longitudinal comparison. This measure was implemented to ensure ethical transparency and to foster reliability of the collected data.

The survey instrument was carefully designed to obtain participants' perceptions of generative AI across a broad range of thematic dimensions. It began by assessing respondents' prior awareness and usage of AI tools, thereby establishing a baseline of familiarity with emerging technologies such as image-generation models. This initial section enabled the researchers to contextualize later responses in terms of participants' experiential exposure to generative AI.

In addition to measuring familiarity, the survey explored participants' levels of personal interest in utilizing generative AI for both entertainment and professional

purposes. A five-point scale captured varying degrees of enthusiasm or skepticism, exploring how respondents foresee AI as either a tool of creative expression or a potential asset in their future career trajectories. These questions provided insight into both cultural engagement and pragmatic orientations toward AI use.

Subsequently, the instrument examined perceptions of AI's broader societal and professional impact, particularly within the creative industries, education, and copyright regulation. Further attention was given to AI's perceived role in fostering innovation, facilitating cooperation, and accelerating creative workflows. A dedicated section assessed participants' views on society's overall readiness to confront the transformative implications of AI, thereby contributing to an understanding of perceived institutional and cultural preparedness.

The questionnaire also addressed conceptual and ethical considerations surrounding authorship, probing participants' views on how AI challenges traditional notions of creative ownership. In parallel, the survey explored perceived limits and benefits associated with AI's integration into creative and intellectual labor. These items included themes such as the dehumanization of creativity, the use of AI as an assistant for complex tasks, potential job displacement, the creation of new professions, cognitive decline and enhancement, the loss or personalization of manual skills, threats to human autonomy, and the potential for AI to augment interpersonal freedom. Respondents were further asked to evaluate the cultural value of craftsmanship and design-based artistic practices in an AI-influenced landscape. Special attention was paid to the implications of AI for individuals with physical or intellectual disabilities, acknowledging its dual potential to either empower or marginalize.

In addition to these dimensions, the survey included a focused section on art, authorship, and aesthetics. Participants were invited to consider questions such as whether AI-generated output can be classified as Art, whether AI can serve as a legitimate artistic tool, and whether its operation risks infringing on copyright protections. Other items investigated AI's potential to enhance creativity through remixing, its role in aesthetic innovation or homogenization, and its contribution to either misinformation or the development of critical visual literacy.

Overall, the survey aimed to provide a comprehensive account of how emerging artists and students of creative disciplines perceive the intersection of AI

with their professional, cultural, and ethical fields. Through a combination of structured items and open-ended prompts, the instrument facilitated an examination of how human agency, artistic integrity, and social responsibility are perceived in the age of algorithmic creativity.

The resulting data was structured, processed and analyzed using standard spreadsheet and data analysis software tools. The analysis followed a mixed-methods approach:

a) Descriptive statistics were computed for each item across the three years, including age distribution, gender distribution and educational level.
b) Quantitative analysis with weighted Likert-scale scores were calculated to normalize attitudinal responses on a scale from 1 to 5.
c) Comparative analysis was conducted, year-over-year, gender-based and educational background-based, to observe changes in perception toward the topic.
d) Qualitative content analysis was applied to open-ended responses to extract thematic patterns.

5.3. The Landscape of Perceptions

5.3.1. Demographics

The presentation of results is structured into five principal components, each contributing a distinct analytical framework to the research aims. First, a descriptive analysis of the demographic characteristics of the sample was performed alongside a detailed examination of the response distributions across all items. This provided foundational insight into the representativeness and variability within the dataset, offering essential context for subsequent interpretative work.

Second, a general and comparative analysis was carried out to identify trends and patterns over the three academic years (2023 - 2025). This longitudinal exploration enabled the detection of perceptual shifts, both gradual and pronounced. Patterns of agreement, neutrality, and disagreement were examined to trace how student attitudes toward AI's creative, ethical, and epistemological implications evolved over time.

Third, the results incorporate a gender-based and educational background comparative analysis, complemented by a correlation analysis between demographic variables and perceptual trends. This dimension of analysis allowed for the identification of significant differences across subgroups (e.g., male vs. female, bachelor's vs. non-bachelor's degree holders), thereby situating the findings within broader socio-educational contexts.

Fourth, the study also includes an analysis of open-ended responses, which offered qualitative depth to the quantitative findings. Through thematic coding, these narratives revealed the nuances, justifications, and affective dimensions underlying student positions. This qualitative insight enriched the interpretation of Likert-scale responses and helped identify emergent themes not fully captured by the closed-ended items.

Finally, to enhance interpretability and underscore key contrasts and convergences across variables and timeframes, a series of visualizations, including bar charts, heatmaps, and comparative line graphs, were employed. These visual tools played also a significant role in highlighting both patterns and distinctions across the dataset. Taken together, these results provide a layered estimation of how students perceive the integration of AI in creative and intellectual contexts, forming the empirical foundation for the critical discussions that follow.

Across the three-year span of data collection (2023 - 2025), a total of 265 students participated in the study, distributed as follows: 82 respondents in 2023, 90 in 2024, and 93 in 2025. The age distribution of the sample remained relatively stable, with most participants consistently falling within the 18-25-year age bracket, reflecting the typical demographic composition of undergraduate and early postgraduate student populations.

In terms of gender representation, the sample was markedly skewed toward female participants throughout all three years. In 2023, females accounted for 73.2% (n = 60) of respondents, rising to 83.4% (n = 75) in 2024, before slightly declining to 73.1% (n = 68) in 2025. Male respondents constituted a much smaller proportion, with 22.0% (n = 18) in 2023, 13.3% (n = 12) in 2024, and 21.5% (n = 20) in 2025. A minority identified which preferred not to be to specify, comprising 4.8% (n = 4), 3.3% (n = 3), and 5.4% (n = 5) in 2023, 2024, and 2025, respectively. Due to the limited number of responses in this latter group, detailed analysis of their

responses was not conducted, as any patterns would lack statistical robustness. This consistent predominance of female respondents is significant, as it provides a context for interpreting the gender-based comparative analyses presented later in this chapter.

Regarding educational background, most respondents reported holding a bachelor's degree or higher. In 2023, 57 participants (approximately 69.5%) had attained a bachelor's degree, followed by 66 in 2024 (73.3%) and 53 in 2025 (57.0%). The proportion of respondents without a bachelor's degree - categorized as undergraduate level - increased, with 25, 24, and 40 respondents across the three respective years. This educational segmentation offers a valuable framework for exploring perceptual divergences based on academic maturity and exposure.

Overall, the demographic data reflects a relatively consistent participant profile across the three years, although with some variations in gender and educational composition, as shown in Table 5-1. These demographic dynamics are essential for understanding the distribution of responses and the interpretative weight of subgroup comparisons.

Table 5-1 Demographic. Source: (Moriniello F., 2025)

	2023	**2024**	**2025**
total	82	90	93
female	60	75	68
male	18	12	20
other	4	3	5
bachelor	57	66	53
undergraduate	25	24	40

5.3.2. Quantitative analysis

After presenting the demographic data, the following sections will illustrate the quantitative results concerning the following dimensions: Prior Knowledge of Artificial Intelligence, Degree of Interest, Perceived Impact, Perceived Influence, Perceptions of Societal Preparation, Perceptions of Authorship in AI-Generated Content, Perceptions of the Limits and Benefits, and Perceptions on AI in Art, Authorship, and Aesthetics.

The findings reveal a downward trend in self-reported familiarity with artificial intelligence over the three-year span. In 2023, a large majority of respondents (74.4%) reported possessing prior knowledge of AI tools and concepts. This figure declined to 58.9% in 2024, and by 2025, the sample appeared nearly divided, with just over half (50.5%) affirming familiarity and 49.5% expressing unfamiliarity.

This progressive decline may indicate a broadening demographic profile of respondents, potentially including individuals with diverse cultural backgrounds or reduced exposure to AI. Alternatively, the growing complexity and ubiquity of AI technologies may have introduced a paradox wherein frequent interaction does not necessarily translate to perceived understanding. Thus, the apparent decline in familiarity could also reflect rising standards for what qualifies as *knowing* AI.

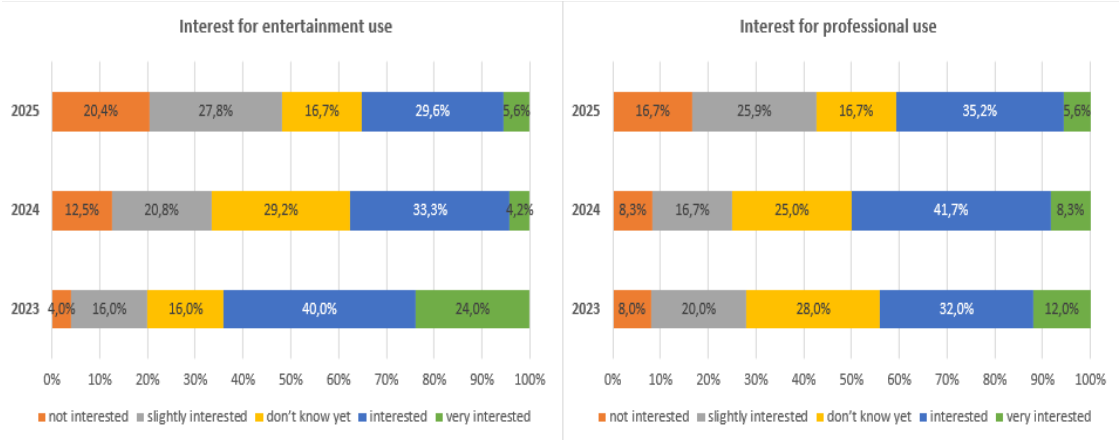

Figure 5-1 Interest expressed in AI cross both professional and recreational domains. Source: (Moriniello F., 2025).

Student interest in the use of AI for entertainment applications has demonstrated a steady decrease. In 2023, over half of the respondents (59.8%) expressed a positive inclination, combining both *interested* and *very interested* categories. This enthusiasm faded slightly in 2024 (48.9%) and fell more sharply by 2025, when only 34.4% maintained such interest, as shown in Figure 5-1. The mean score correspondingly declined from 3.52 to 2.72 over the period. This downward trend may be indicative of declining novelty or satisfaction with AI for entertainment purposes. Increasing exposure to AI-generated content might have fostered critical perspectives on its originality, aesthetic quality, or cultural value. Additionally, fatigue from AI's pervasive use in media could contribute to a sense of disengagement among students.

In contrast to entertainment, attitudes toward AI in professional settings remained relatively steadier, although a moderate decline was also observed. In 2023, more than half of the respondents (53.6%) reported being *interested* or *very interested* in professional applications of AI. By 2024, this dropped slightly (46.6%), and in 2025, it fell to 38.7%, as shown in Figure 5-1. Mean scores dropped from 3.40 to 2.86. Despite the overall decline, the steadier retention of interest in professional uses compared to entertainment suggests that students continue to view AI as a functional tool with tangible benefits for the workplace. The reduced enthusiasm may nonetheless reflect increasing concerns about employability, data ethics, or professional autonomy in the face of rapid automation.

Student perceptions of AI's impact on creative professions have become increasingly negative. In 2023, views were slightly pessimistic, with a mean score of 2.85 and a relatively balanced distribution of responses. However, sentiment shifted markedly by 2024 (mean = 2.61) and culminated in 2025 with a pronounced critical stance, where nearly three-quarters of respondents characterized the impact as *very negative* or (mean = 2.15), as shown in Figure 5-2. These results underscore a growing apprehension about the integrity and future of human creativity in professional contexts. Students appear to fear that AI may lead to artistic homogenization, diminish the perceived value of human effort, or reduce jobs in creative industries.

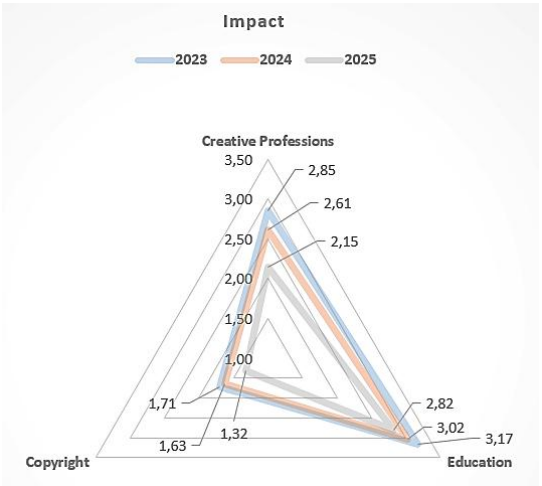

Figure 5-2 Perceived impact of AI across three distinct domains. Source: (Moriniello F., 2025)

Attitudes toward AI in educational settings were initially more favorable, with 43.9% of participants in 2023 describing the influence as positive. However, positivity diminished slightly in 2024 and further in 2025, where negative sentiment rose, and the mean score declined from 3.17 to 2.82, as shown in Figure 5-2. The shift may reflect emergent concerns regarding academic integrity, reliance on automated tools, or the pedagogical value of AI-generated content.

Among the domains assessed, copyright concerns elicited the most consistently negative evaluations. In all three years, over 85% of respondents agreed or strongly agreed that AI poses a significant risk to authorship rights. This trend intensified over time, with the mean impact score falling from 1.71 in 2023 to 1.32 in 2025, as shown in Figure 5-2. Such sustained negativity suggests that students view copyright infringement as a persistent and unresolved issue within AI development. The critical focus may be attributed to controversies over data sourcing, style replication, and the absence of regulatory mechanisms in generative models.

Over the three-year period from 2023 to 2025, student perceptions of the influence of artificial intelligence (AI) on key dimensions of innovation, cooperation, and creative acceleration reveal generally positive, though increasingly balanced attitudes. While AI is seen as a beneficial force, particularly in enhancing innovation, cooperation between humans and accelerating creative processes, there is evidence of a gradual tempering of initial enthusiasm, accompanied by a growing awareness of its limitations.

The domain of innovation was consistently rated favorably, as shown in Figure 5-3. In 2023, 74.4% of respondents evaluated AI's impact on innovation as either *positive* or *very positive*, yielding a high mean score of 3.95. Although this promising perception remained strong in 2024 (mean = 3.82), there was a slight increase in negative assessments (8.9%). By 2025, while the mean remained relatively high at 3.73, the proportion of *positive* evaluations dropped to 34.4%, with corresponding rises in *neutral* and *negative* responses. These trends may suggest that initial optimism is increasingly tempered by direct experience with the limitations or complexities of AI in practice.

In contrast, student perceptions of AI's influence on cooperation were more variable. In 2023, evaluations were relatively moderate (mean = 2.96), with 30% indicating a positive view and a substantial 39% remaining neutral. By 2024, the

mean had dipped slightly to 2.90, accompanied by an increase in negative responses (33.3%). However, a rebound occurred in 2025, with the mean rising to 3.25 and 44.1% expressing a positive perception, while negative assessments declined. This shift suggests that while initial expectations were mixed, emerging use cases and applications may have begun to demonstrate more tangible collaborative benefits, potentially in academic or institutional settings.

Among the three areas assessed, the most encouraging and consistent ratings were found in relation to acceleration of creative processes. In 2023, a large majority of respondents (82.9%) perceived AI as positively accelerating creativity, resulting in a notably high mean of 4.21. Although this figure declined modestly to 4.00 in 2024 and 3.87 in 2025, the overall sentiment remained strongly positive, with 69.9% still rating the influence as *positive* or *very positive* by the final year. Nonetheless, a gradual rise in neutral and negative evaluations across time points to the possible emergence of concerns about the quality, depth, or sustainability of accelerated creative production.

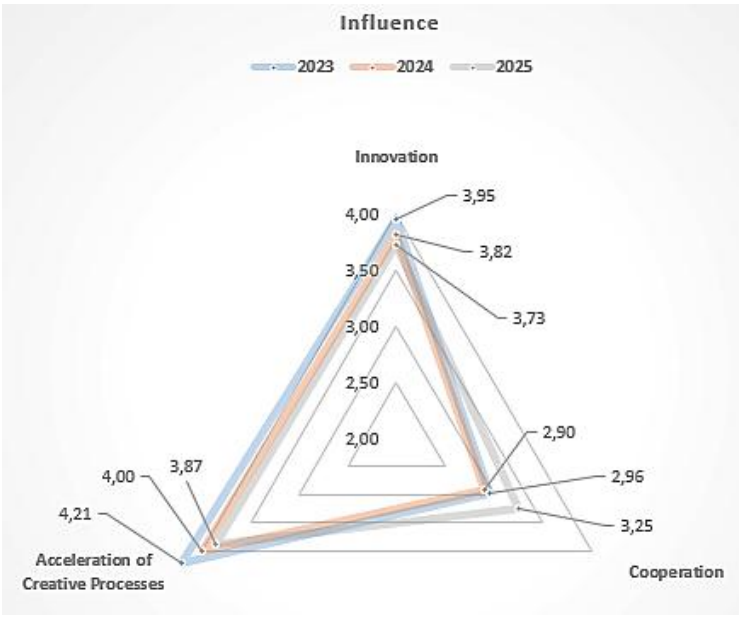

Figure 5-3 Perceived influence of AI across three distinct domains. Source: (Moriniello F., 2025)

Seeing the whole picture, these results suggest that while student perceptions of AI's impact in these domains remain predominantly positive, a subtle but meaningful shift in sentiment is evident. The initial enthusiasm that characterized the early stages of AI implementation appears to be giving way to a more reflective and differentiated understanding. The consistent strength of support for AI's role in enhancing creative speed affirms its perceived utility in streamlining workflows and generating ideas. However, the evolving assessments of its influence on innovation indicate a growing awareness of the practical dimensions that accompany AI integration. This evolution in perception underscores the importance of contextualizing technological optimism within frameworks that acknowledge complexity, user experience, and socio-cultural implications.

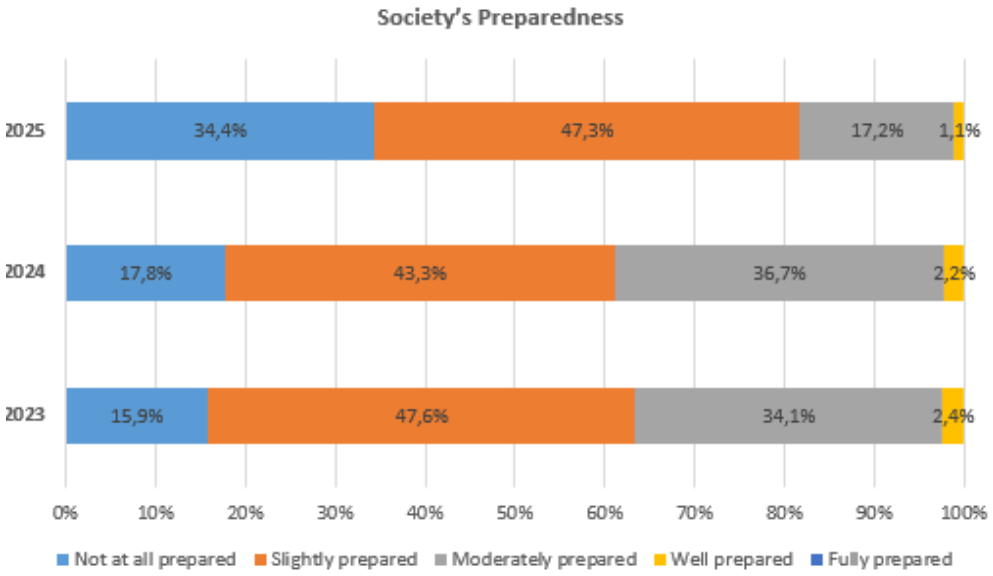

Figure 5-4 Perceived society's general preparation to confront the implications of AI. Source: (Moriniello F., 2025)

In addition to views on legal and creative matters, the study assessed participants' beliefs about society's general preparation to confront the implications of AI, as shown in Figure 5-4. Findings from 2023 to 2025 reveal a steady erosion of confidence in societal readiness. The average rating remained modest at 2.23 in both 2023 and 2024, with the majority of participants describing society as only *slightly prepared*. By 2025, the mean score dropped further to 1.85,

accompanied by a significant increase in respondents who believed society was *not at all prepared*, rising from 15.9% in 2023 to 34.4% in 2025. Throughout all three years, the number of participants who considered society *well prepared* or *fully prepared* was negligible. This downward trend in perceived readiness may be interpreted as a reflection of the growing public awareness of AI's far-reaching societal impacts. Taken together, the previous results and societal readiness reveal a deepening tension between technological capability and institutional preparedness, as well as between creative production and ethical governance.

Throughout the study period, the dominant perception was that authorship of AI-generated creations is inherently collective. The composite response *All of the above*, which attributes credit to the AI user, the developers, dataset creators, and those represented in the data, consistently received the highest endorsement. While 57.3% selected this option in 2023, this figure declined slightly to 49.5% in 2025. Meanwhile, other perspectives on authorship - such as exclusive credit to the user or dataset contributors - remained marginal but showed slight growth. Notably, the proportion of students who believed that *no one* should be credited doubled from 4.9% to 10.8% over the same period. This could indicate a rising philosophical skepticism about human authorship in contexts of computational creativity or ethical concern over unconsented data use. Collectively, these patterns show students' distinct opinions of authorship in AI-supported work. The growing fragmentation in responses points to a need for clearer legal and educational frameworks to define ownership in hybrid creative processes.

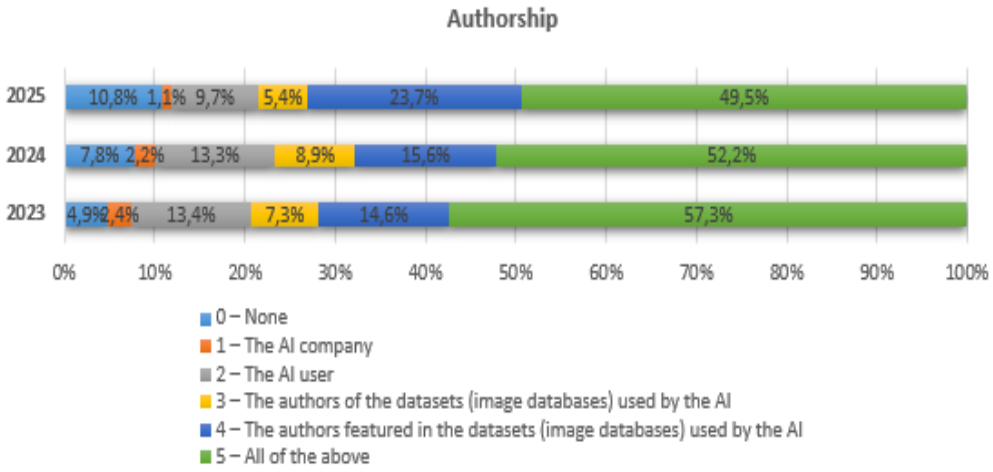

Figure 5-5 Students' opinions on the authorship for AI-generated creations. Source: (Moriniello F., 2025)

5.3.3. Perceived limits and benefits of AI

The longitudinal data gathered from students between 2023 and 2025 indicates a gradual yet apparent shift in attitudes toward the limits and benefits of AI in creative, educational, and social contexts, as shown in Figure 5-6. The analysis focused on thirteen thematic dimensions. Overall, the findings suggest a progression from cautious interest to critical position, with students demonstrating increasing awareness of the ethical, cognitive, and cultural implications associated with AI technologies.

A notable theme to emerge from the data concerns the perceived dehumanization of creativity. Over the three-year period, an increasing proportion of students expressed agreement with the idea that AI may marginalize human roles in creative processes. By 2025, over half of respondents affirmed this concern, with a significant increase in strong agreement. This trend implies a deepening anxiety about the erosion of human exceptionality in the production of art and ideas. It highlights a persistent belief among students that creativity remains an inherently human capacity, resistant to algorithmic replication.

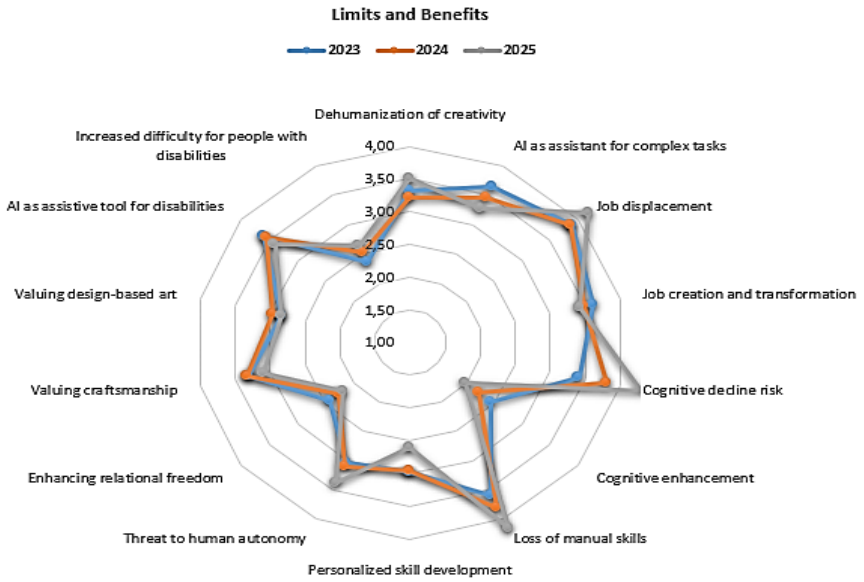

Figure 5-6 Perceived limits and benefits of AI. Source: (Moriniello F., 2025)

In relation to practical applications, students consistently regarded AI as a useful assistant for complex or repetitive tasks, such as those encountered in professional or academic settings. However, the data also reveals a subtle decline in enthusiasm across the observed period. While in 2023 the mean score was relatively high (M = 3.65), it declined to 3.28 by 2025. This suggests that although AI's instrumental value is broadly acknowledged, students are becoming increasingly cautious, perhaps due to concerns over overreliance, skill erosion, or the ethical consequences of delegation.

Among the most pressing concerns identified in the data is the potential for a reduction in jobs. The percentage of students who agreed that AI poses a threat to employment rose steadily, with the average agreement score increasing from 3.88 to 4.19 between 2023 and 2025. By the final year, more than 80% of respondents believed that AI would reduce job opportunities. This finding underscores the intensifying perception that automation is not merely a supplementary tool but a potential replacement, thereby calling attention to the urgent need for labor policy reform and career future-proofing strategies.

Nevertheless, students also acknowledged the potential for job creation and transformation, even though with decreasing confidence. Agreement with this view remained moderate across all years, but a slight decline in the mean score - from 3.62 to 3.43 - indicates a growing uncertainty. This suggests a recognition of AI's capacity to innovate new roles, accompanied by a reluctance to assume that such changes will be equitable or sufficient to offset losses.

One of the most striking findings concerns the risk of cognitive decline. The belief that AI could negatively affect intellectual capabilities intensified significantly over time. In 2023, just over half of respondents expressed concern; by 2025, this number had increased to more than 80%, with a dramatic rise in strong agreement. Such results suggest mounting fears around dependency on AI tools, particularly in educational settings. These concerns point to a potential overreliance on automated systems that may compromise critical thinking, creativity, and problem-solving skills, thus signaling the need for proactive educational responses, such as digital literacy and metacognitive skill development.

In contrast, confidence in AI's potential to enhance cognitive abilities declined sharply over the same period. The mean response dropped from 2.45 in 2023 to just 1.98 in 2025, reflecting a steady erosion of belief in AI as a tool for intellectual empowerment. By the final year, over 75% of respondents either *disagreed* or *strongly disagreed* with this proposition. This divergence between perceived risk and perceived benefit may reflect a growing awareness of the limitations of AI in fostering learning or transformative insight.

Closely related to this is the perception of loss of manual skills. Students increasingly agreed that regular reliance on AI could reduce practical competencies, such as those required in artistic, design-based, or craft-oriented domains. Agreement rose consistently over the three years, culminating in a mean score of 4.16 in 2025. This reinforces the idea that concerns about AI are not limited to mental faculties but also encompass somatic and embodied forms of knowledge and skill.

When evaluating AI's potential for personalized skill development, however, students expressed persistent skepticism. The average level of agreement declined from year to year, with the 2025 mean falling to 2.60. The prevalence of neutral and negative responses suggests that AI's publicized capacity for individualized learning

remains, in the eyes of students, largely unfulfilled. These disconnects between technological promise and perceived experience may stem from a lack of transparency, adaptability, or pedagogical alignment in current AI tools.

Another emergent concern pertains to the threat to human autonomy. Although this theme showed only moderate growth, the increasing agreement - rising to a mean of 3.39 in 2025 - reflects growing apprehension about the role of AI in decision-making, surveillance, and social control. This perception supports broader discussions around algorithmic governance, data ethics, and the need for transparent institutional frameworks that safeguard individual rights.

Conversely, students expressed limited belief in AI's capacity to enhance relational freedom or improve interpersonal relationships. Mean scores remained consistently low (approximately 2.2), and more than 60% of participants *disagreed* or *strongly disagreed* with the statement across all years. This suggests that students regard emotional intelligence and empathy as distinctly human capacities, which AI cannot meaningfully replicate. As such, this perception may inform boundaries around AI integration into domains involving care, therapy, or human connection.

Students were moderately in agreement that the growing presence of AI might increase the value of handmade or human-centered artistic practices, but this view did not intensify over time. Mean values hovered around 3.0 and slightly declined by 2025. While there is some recognition that technological saturation could prompt a cultural revaluation of human creativity, this belief is not held strongly or consistently across the sample.

In contrast, the notion of AI as an assistive tool for individuals with disabilities was met with broad and consistent approval. Over all three years, this was among the highest-rated categories, with mean scores consistently above 3.4. Students recognized the practical benefits of AI in promoting accessibility, particularly in relation to communication, mobility, and visual translation.

Finally, it is concerned that AI might increase difficulty for people with disabilities remained consistent with the previous result, although mean scores rose slightly by 2025 (from 2.37 to 2.63). The overall trend suggests that students are

cautiously optimistic about the inclusive potential of AI, while remaining mindful of possible unintended consequences.

The findings point to a marked evolution in student thinking, from initial openness to growing critical engagement. Three overarching patterns can be identified. First, there is a notable shift toward critical awareness, with students increasingly questioning AI's cognitive, creative, and social impacts. Second, a trend of polarization is evident, whereby students tend to view AI either as a transformative tool or a fundamental threat, with fewer holding ambivalent or neutral positions. Third, students show an increasing ability to differentiate by domain: while AI is generally accepted in technical and assistive contexts, its role in artistic, relational, and intellectual spheres is perceived more skeptically. Taking together, these results align closely with broader sociotechnical debates surrounding automation, human agency, and the future of work and creativity.

5.3.4. Perceptions of AI in Art, Authorship, and Aesthetics

Data collected reveal a progressively more critical perspective on the integration of artificial intelligence (AI) within creative domains. The responses, which address a broad spectrum of themes including artistic legitimacy, ethical authorship, and aesthetic production, suggest an evolving student discourse increasingly attentive to both the philosophical and socio-cultural implications of AI-generated content.

One of the most significant trends concerns students' views on the artistic legitimacy of AI-generated outputs. Across the three-year period, there was a notable increase in the number of respondents who rejected the proposition that such output should be considered art. This is evidenced by the rise in mean scores from 3.26 in 2023 to 4.08 in 2025, coupled with a substantial increase in strong agreement, which reached 46.2% in the final year. These findings point to a consolidating belief that artistic authenticity is inherently tied to human creativity. This pattern suggests that students increasingly regard AI as lacking intentionality and expressive capabilities typically associated with human artistic practice.

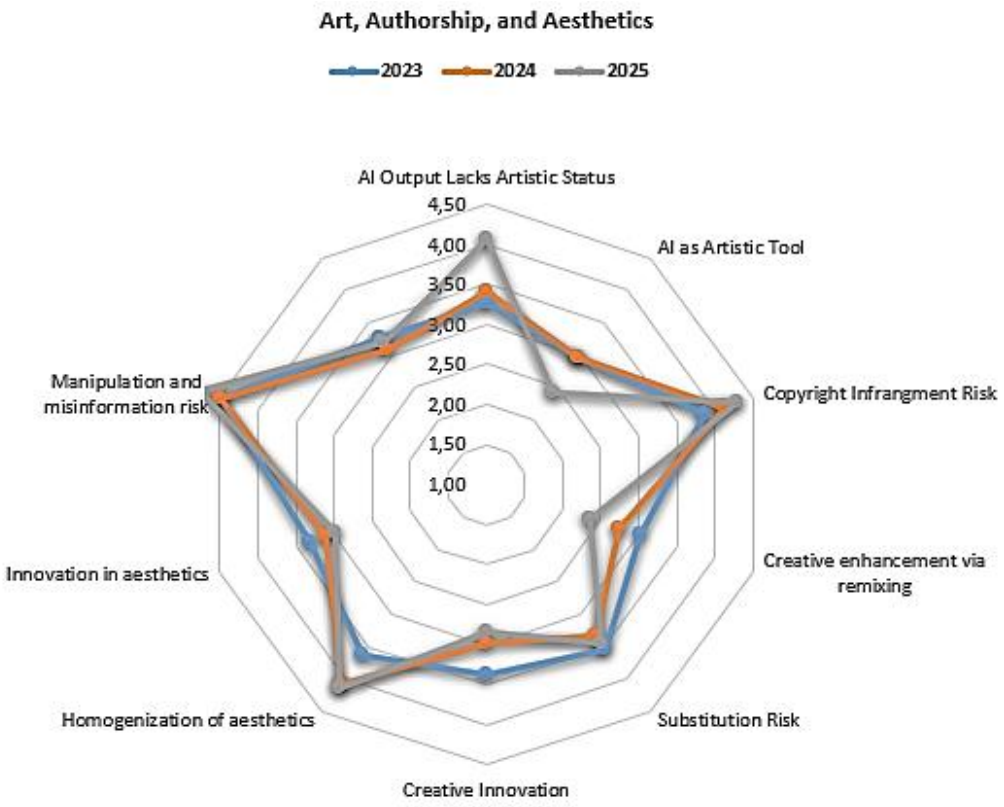

Figure 5-7 Perspective on implication of AI within creative domains. Source: (Moriniello F., 2025)

Similarly, perceptions of AI as a valid artistic tool when guided by human intervention declined significantly over the same period. While earlier groups displayed a neutral position (mean = 2.95 in 2023), this posture weakened over time, reaching a mean of 2.41 by 2025. The proportion of students expressing disagreement or strong disagreement rose markedly, exceeding 57% in the final year. These results imply that hybrid creative models - where AI serves as a collaborator - are losing credibility among students, who appear to apply increasingly stringent criteria for what constitutes legitimate artistic production.

Another area that attracted considerable attention concerns the ethical implications of authorship, particularly regarding copyright. Student concern about

AI's role in potentially infringing intellectual property rights increased consistently, with the average response rising from 3.87 in 2023 to 4.30 in 2025. By the end of the study period, over 90% of participants agreed or strongly agreed that AI systems contribute to violations of authorship norms. This heightened concern may reflect growing awareness of the opaque mechanisms through which generative AI models are trained, often using datasets that lack proper attribution or consent.

A related trend pertains to creative enhancement through remixing. Initially, some students believed that AI could contribute to creativity by recombining existing styles in novel ways. However, this view became increasingly contested. The mean response declined from 3.02 in 2023 to 2.37 in 2025, and the proportion of strong disagreement rose to 30.1%. These findings suggest that remixing is no longer widely seen as a credible form of innovation. Instead, students are drawing a clearer distinction between genuine originality and algorithmically generated imitation.

In contrast, perceptions of AI's capacity to substitute human creative faculties remained relatively stable across the three-year span. Despite minor fluctuations (mean values ranged from 3.54 to 3.45), a consistently high proportion of students expressed concern over AI's potential to replicate human artistic functions. This sustained apprehension contributes to a deeply rooted anxiety regarding the displacement of human authorship and the future of creative labor.

The view that AI might function as a catalyst for human creativity - enhancing rather than replacing human agency - appears to be decreasing. While in 2023 the mean score stood at 3.38, by 2025 it had dropped to 2.84, with overall support for this proposition halving. This trend suggests that the initial optimism surrounding AI's role as a collaborative enhancer is being replaced by more skeptical evaluations, perhaps due to concerns about overdependence or creative homogenization.

Indeed, one of the most striking changes observed in the data pertains to the homogenization of aesthetics. Students increasingly perceived AI-generated visual outputs as adhering too closely to dominant cultural norms. The mean score for this item rose from 3.63 in 2023 to 4.14 in 2025, with over 80% agreement recorded in the final year. This development signals a growing concern that AI contributes to aesthetic standardization, thereby undermining artistic diversity and originality.

In line with this, confidence in AI's potential to foster innovation in aesthetic models showed a declining trajectory. The average level of agreement decreased from 3.30 in 2023 to 2.98 in 2025, suggesting a diminished belief in AI's ability to introduce truly novel paradigms in artistic production. It is plausible that students perceive AI outputs as derivative or overly reliant on existing stylistic patterns.

Of all the dimensions explored, misinformation and manipulation emerged as the most consensual concern. Agreement with the statement that AI-generated images could be used to spread disinformation increased steadily over the study period, reaching near-universal consensus in 2025 (mean = 4.76; 78.5% strongly agreed). This indicates a shared recognition of the powerful realism that characterizes AI-generated visuals and the dangers they pose in social and political contexts.

Interestingly, while general skepticism toward AI increased, a smaller subset of students continued to believe that AI could serve as a tool for developing critical visual literacy. Despite some fluctuation, the mean remained relatively stable (from 3.26 in 2023 to 3.19 in 2025). This suggests that while the majority view is critical, there is still a minority who see pedagogical value in AI, particularly in fostering more reflective and analytical approaches to visual media.

Taken together, the data reflects a pronounced evolution in student attitudes over time, as shown in Figure 5-7. The trajectory of responses reveals a shift from cautious experimentation to a more critical and discriminating engagement with AI's role in creative practices. Three major implications arise from these findings. First, artistic legitimacy is increasingly aligned with human authorship, reinforcing the centrality of intentionality and emotional depth in defining artistic value. Second, ethical and legal concerns - particularly regarding authorship and originality - are becoming more prominent, demanding clearer policy guidance and educational awareness. Third, students are increasingly attuned to the cultural effects of AI, particularly its tendency to homogenize aesthetics and amplify misinformation.

5.3.5. Gender-Based Comparative Analysis

This section presents a comparative analysis according to gender across three academic years. The results reveal convergence in general trends concerning most variables with some slight divergences between male and female participants in their attitudes toward AI. Although certain dimensions exhibit converging opinions, particularly around legal and ethical concerns, others demonstrate gendered patterns that suggest differing expectations, degrees of familiarity, and interpretive frameworks. In addition, the consistently distinct responses of participants identifying as Other, though based on a limited sample size, raise important considerations for future research.

Table 5-2 Summary of gender-based comparative analysis across eight dimensions. Source: (Moriniello F., 2025)

Dimension	**Female Perspective**	**Male Perspective**
Familiarity with AI	Declining familiarity (73.3% to 39.7%)	Stable/increasing familiarity (72.2% to 80%)
Interest in AI for Entertainment	Declining interest (mean 3.55 to 2.78)	Higher start, steeper decline (mean 3.72 to 2.65)
Interest in AI for Professional Use	Moderate decline (mean 3.45 to 2.93)	Stable interest (mean 3.50 to 3.00)
Impact on Creative Professions	Gradual critical stance	Steeper critical shift
Impact on Education	Moderately positive, stable	Fluctuating, less optimistic
Copyright Concerns	High and increasing concern (mean 4.24)	High concern (mean 4.40)
Societal Preparedness	Slightly less negative than males	More critical consistently
Authorship Attribution	Stable support for collective attribution	Fragmenting views, rising focus on dataset subjects

One of the most pronounced gender differences over time is evident in self-reported familiarity with AI. Female respondents show a steady decline in prior knowledge, from 73.3% in 2023 to only 39.7% in 2025. In contrast, male participants display a consistent or even rising familiarity, culminating in 80% in 2025. These findings suggest a widening gender gap in technological confidence or exposure. The divergence may reflect structural disparities in access to or engagement with AI-related content, potentially influenced by curriculum, social context, or self-perception of digital literacy.

When asked about their interest in AI for entertainment purposes, female respondents expressed a marked decline, with mean scores falling from 3.55 to 2.78. This reduction in enthusiasm suggests growing skepticism, potentially tied to concerns over authenticity and the dilution of creative expression. While male participants also exhibited declining interest, they started from a higher baseline (mean = 3.72 in 2023) and declined stronger to 2.65 in 2025. These results might imply a greater initial enthusiasm among male students toward AI in leisure contexts with a later disillusion, possibly due to higher technological self-efficacy or early adopter tendencies.

In professional contexts, both groups reported declining interest, though male respondents maintained slightly more consistent levels over time. Female participants began with moderate interest (mean = 3.45) but fell to 2.93 by 2025. The gendered difference, while not dramatic, indicates that female students may be increasingly critical of AI's relevance or ethical implications in the workplace.

Perceptions of AI's impact on creative professions diverged notably by gender. Female students showed a gradual erosion of confidence, with the proportion of *very negative* responses increasing markedly. Male participants initially demonstrated more optimism, but their perceptions deteriorated more rapidly by 2025, with 80% rating AI's creative impact on creative work as negative. This trajectory suggests that, while female respondents maintained a steady critical stance, male participants underwent a sharper reassessment - perhaps reflecting disillusionment with AI's creative limitations or its implications for authorship.

Regarding education, female respondents maintained more balanced and moderately positive evaluations throughout the period. Male students, on the other hand, exhibited fluctuating views and a decline in optimism by 2025. This suggests that female students may retain greater confidence in AI's potential as a pedagogical tool, even as its limitations become clearer. Copyright emerged as the most consistently negative category across all genders. Both male and female students overwhelmingly perceived AI as a threat to authorship rights, and this concern intensified over time.

Perceptions of societal preparedness for artificial intelligence (AI) reveal subtle contrasts between gender groups over the three-year period. Although both male and female respondents consistently expressed low confidence in society's readiness, the trajectory of decline varied slightly. Female participants began with a marginally more optimistic outlook in 2023, though still largely negative, and continued to report declining confidence through to 2025. However, by the final year, their evaluations remained slightly less negative than those of their male counterparts.

Male respondents, in contrast, started the period with a more critical assessment and maintained a more pessimistic view throughout. By 2025, they reported the lowest average preparedness scores among the binary gender groups. These findings suggest a shared recognition of societal under preparedness for AI, with minor gender-based differences in the depth and progression of that concern.

Students were also asked to consider who should be credited for content generated with the aid of AI. While both male and female respondents primarily supported a collective attribution model (*All of the above*), notable gender differences emerged over time. Female respondents remained relatively consistent in this preference, indicating a stable recognition of the multifaceted nature of authorship in AI contexts.

Male respondents, however, showed increasing fragmentation. By 2025, support for collective attribution dropped significantly, while attribution to dataset subjects rose, suggesting a shift toward representational justice or ethical concern about consent in dataset composition. At the same time, the percentage of males who selected the AI user as sole author fell sharply, indicating a retreat from simplified authorship models.

The comparative analysis of student responses about limits and benefits reveals several gender-based distinctions in the perceived implications of AI for creativity, employment, cognition, autonomy, and inclusion, as shown in Table 5-4. While broad patterns of concern and ambivalence are observable across all participants, female and male respondents demonstrate differing emphases and evaluative tendencies, reflecting varying degrees of optimism, skepticism, and critical engagement.

Female students consistently exhibited greater apprehension regarding the potential dehumanization of creativity. With approximately half of the female participants agreeing or strongly agreeing that AI marginalizes human artistic roles (mean = 3.30), they appear to hold more protective attitudes toward the sanctity of human authorship. Male students, while also concerned (mean = 3.22–3.45), expressed this view with slightly less intensity, indicating a somewhat more flexible stance on the role of AI in creative processes.

Table 5-3 Summary of gender-based comparative analysis concerning limits and benefits. Source: (Moriniello F., 2025)

Dimension	**Female Perspective**	**Male Perspective**
Dehumanization of Creativity	More apprehensive (mean 3.30)	Concerned (mean 3.22 to 3.45)
AI as Assistant for Complex Tasks	More optimistic (mean up to 3.70)	Variable optimism (mean 3.00 to 3.67)
Job Displacement Concern	High concern (lower than males)	More intense concern (mean = 4.30)
Job Creation	More optimistic (mean = 3.73)	Less optimistic (mean = 3.35)
Cognitive Decline Risk	Concerned (less polarized)	More polarized concern
Cognitive Enhancement	Slightly more hopeful (mean = 2.62)	More skeptical (mean = 2.00 to 2.33)
Loss of Manual Skills	Concerned (mean up to 4.16)	Highly concerned (mean up to 4.50)
Personalized Skill Development	More supportive (mean = 3.10)	More skeptical (mean = 2.50)
Threat to Human Autonomy	Divided (mean 2.92)	More concerned (mean up to 3.65)
Enhancing Relational Freedom	Skeptical (mean < 2.5)	Skeptical (mean < 2.5)
Valuing Craftsmanship	More inclined (mean = 3.50)	Variable opinion
Valuing Design-Based Art	Tepid (mean 2.87)	Tepid (mean 2.95)
Assistive Tool for Disabilities	Supportive (mean = 3.78)	Supportive but varied
Increased Difficulty for Disabled	More concerned (mean = 2.66)	Less concerned

In contrast, when evaluating AI's role as a supportive tool for complex tasks, female students reported higher mean scores (up to 3.70), suggesting greater enthusiasm for AI's potential to assist human labor. Male respondents, by comparison, demonstrated more variability (means ranging from 3.00 to 3.67), implying less uniform optimism and perhaps a more cautious engagement with AI as a collaborative agent.

Concerns about job displacement due to AI were consistently high among both genders, yet male participants expressed this anxiety with particular intensity in one subgroup, reaching a mean score of 4.30. This heightened alarm may be indicative of a stronger identification with roles at risk or greater exposure to narratives of technological unemployment. Regarding job creation and transformation, female students expressed slightly greater optimism (mean = 3.73) compared to their male peers (lowest mean = 3.35). This suggests that women may be more receptive to the idea that AI could foster new professional pathways, or they may perceive themselves as more adaptable in a changing labor market.

In terms of cognitive decline, both groups expressed concern, although male students showed more polarized responses, with some subgroups reporting a mean as high as 4.20. This disparity may signal deeper anxieties among male respondents about intellectual erosion resulting from AI dependency. While skepticism about AI's potential for cognitive enhancement was evident across the board, female students were slightly more hopeful (mean = 2.62) than males (mean = 2.00 to 2.33). This difference may point to divergent expectations regarding AI as a tool for intellectual development, with women retaining a degree of cautious optimism.

Regarding the loss of manual skills, concern was substantial among both genders. However, male students reported particularly strong agreement in certain subgroups (up to mean = 4.50), possibly reflecting heightened sensitivity to the erosion of physical or technical competencies in an increasingly automated environment. In the context of personalized skill development, female respondents were more supportive (mean = 3.10), whereas male participants displayed greater skepticism (lowest mean = 2.50). These results may reflect differing expectations of AI's capacity for tailoring learning experiences or fostering individual agency.

A slight gender difference emerged in perceptions of threats to human autonomy. Male students, with mean scores reaching 3.65, reported somewhat greater concern about systemic control and surveillance implications. Female participants were more divided, with a lower average (mean = 2.92), indicating a more nuanced or ambivalent stance on the issue. Interestingly, both genders expressed low confidence in AI's capacity to enhance relational freedom, with mean scores under 2.5. This convergence reflects a shared skepticism about the potential

of AI to foster meaningful interpersonal connections or emotional intelligence, reaffirming the belief that relational domains remain fundamentally human.

Regarding craftsmanship, female students were more inclined to believe that AI would elevate the value of artisanal or handmade artistic practices (mean = 3.50). Male participants exhibited greater variability in this domain (means ranging from 2.89 to 3.67), perhaps reflecting a broader spectrum of interpretations about AI's influence on artistic labor.

In contrast, valuation of design-based art elicited similarly tepid responses from both groups (means = 2.87 to 2.95), indicating a shared uncertainty about whether AI's rise would increase appreciation for aesthetically driven, digitally mediated forms of creation.

Across all three years, both male and female students expressed strong support for the idea that AI could function as an assistive tool for people with disabilities. Nonetheless, female respondents reported slightly higher mean scores (mean = 3.78), suggesting a more consistent endorsement of AI's inclusive potential. In contrast, male students exhibited more variability, pointing to a less unified, albeit still positive, appraisal.

When asked whether AI could create more difficulties for disabled populations, both genders tended to disagree. However, female students reported slightly higher concern (mean = 2.66), indicating a greater awareness of the double-edged nature of technological advancement in contexts of vulnerability.

An analysis of gender-based differences in student perceptions of AI in the domains of art, authorship, and aesthetics reveals both convergence and divergence in evaluative attitudes over time. While shared concerns, such as copyright infringement and misinformation, emerge as consistent across genders, other domains display marked variation, particularly regarding creative authenticity, innovation, and the role of human intervention in AI-generated content.

Both male and female students increasingly rejected the idea that AI-generated outputs constitute legitimate art, converging by 2025 with high agreement levels (means = 4.00 and 4.07, respectively). However, men exhibited a steeper rise in this

skepticism, suggesting a more rapid reassessment of AI's artistic validity. When asked whether AI could be considered a legitimate artistic tool when used with human guidance, male respondents showed greater volatility: support peaked in 2024 (mean = 3.50) before declining sharply to 2.10 in 2025. In contrast, female respondents reported a steadier, more gradual decline (3.05 to 2.54), indicating a more sustained but cautious openness to hybrid creative processes. This pattern suggests that male students may increasingly adopt a more rigid, human-centric view of artistic authorship over time.

Perceptions of ethical risks, such as copyright infringement, were high among all students but reached even higher levels among male respondents in 2025 (mean = 4.40 compared to 4.24 for females). Similarly, concern over the risk of manipulation and misinformation was near-universal but slightly more pronounced among men, with a peak mean of 4.85 versus 4.74 for women. These findings point to a gender convergence in recognizing the socio-legal dangers of AI while suggesting that men may engage with these threats through a slightly more heightened lens.

In relation to creative enhancement via stylistic remixing, male students demonstrated greater skepticism than their female counterparts (2025 mean = 2.15 vs. 2.49), possibly reflecting a stronger resistance to the notion of recombination as creative innovation. Similarly, male students were more doubtful about AI fostering new aesthetic paradigms, reporting a declining mean from 2.94 in 2023 to 2.40 in 2025, whereas females remained more optimistic, albeit with a downward trend (3.48 to 3.16). These divergences may reflect gendered differences in evaluating the originality and cultural value of algorithmically generated content.

Table 5-4 Summary of gender-based comparative analysis of AI in creative domains. Source: (Moriniello F., 2025)

Dimension	**Female Perspective**	**Male Perspective**
Legitimacy of AI-Generated Art	Steady increase in skepticism	Sharp rise in skepticism
AI as Artistic Tool (Human-Guided)	Gradual decline from 3.05 to 2.54	Volatile: peaked at 3.50 in 2024, dropped to 2.10 in 2025
Copyright Infringement Concern	High concern, mean = 4.24 in 2025	Even higher concern, mean = 4.40 in 2025
Creative Enhancement via	Mild skepticism, mean = 2.49 in	Greater skepticism, mean = 2.15 in

Remixing	2025	2025
Substitution Risk (AI Replacing Human Creativity)	Growing concern, mean = 3.63 in 2025	Modest decline to 3.05 in 2025
AI as Catalyst for Human Creativity	Initial optimism declined to 2.87 in 2025	Consistently skeptical, mean = 2.70 in 2025
Homogenization of aesthetics	Increasing concern (mean = 3.72 to 4.09)	Sharper rise in concern (mean = 3.22 to 4.20)
Innovation in Aesthetic Paradigms	Sustained optimism, decline from 3.48 to 3.16	More doubtful, decline from 2.94 to 2.40
Misinformation Risk	Strong concern, mean = 4.74 in 2025	Slightly higher concern, mean = 4.85 in 2025
AI and Critical Visual Literacy	Stronger belief, mean = 3.29 in 2025	Neutral/static view, mean = 3.00 in 2025

On the question of substitution risk, the belief that AI may replace human creativity, women expressed growing concern, reaching a mean of 3.63 by 2025, while male responses declined modestly to 3.05. This suggests a gendered vulnerability, where women may feel more threatened by the encroachment of AI into traditionally human-centric creative roles. A similar pattern emerged in views on AI's potential to foster human creativity. While female students initially expressed strong optimism (mean = 3.62 in 2023), this diminished by 2025 (mean = 2.87), approaching the more consistently skeptical stance of male participants (mean = 2.70).

Finally, female students were more likely to believe that AI-generated visuals could enhance critical visual literacy (mean = 3.29 in 2025), whereas male responses remained neutral or static (mean = 3.00). This may reflect a stronger belief among female participants in the pedagogical or reflective potential of AI media, despite broader reservations.

In sum, while concerns around misinformation and legal infringement unify perceptions across gender lines, women tend to approach AI in art with initial uncertainty that increase gradually, while men more frequently adopt sharper and more fluctuating critical positions, as shown in Table 5-4. These patterns suggest that gender plays a role not only in the perceived risks of AI but also in how students conceptualize the boundaries of creativity, authorship, and cultural value in the age of generative technology.

5.3.6. Educational Background-Based Comparative Analysis

This section presents a comparative analysis of student perceptions of AI across three academic years, disaggregated by educational background. While overarching trends were evident across all groups, differences emerged between students with and without a bachelor's degree. These distinctions offer insight into how educational attainment may influence familiarity, interest, critical evaluation, and ethical framing of AI technologies.

Table 5-5 Summary of educational background-based comparative analysis across seven dimensions. Source: (Moriniello F., 2025)

Dimension	**Graduate Perspective**	**Undergraduate Perspective**
Familiarity with AI	Declining and less familiarity	Declining familiarity but greater than graduate
Interest in AI	Interest for professional use, greater than undergraduate. Decreasing interest	Interest for professional use, less than graduate. Decreasing interest
Impact on Creative Professions	Decreasing, from neutral to negative	Decreasing, from neutral to negative. More pessimistic
Impact on Education	Decreasing, from positive to negative	Stable
*Impact on Copyrig*ht	Negative and decreasing	Negative and decreasing. Less pessimistic
Societal Preparedness	Critical view, similar trend with undergraduate	Critical view
Authorship Attribution	Support for collective attribution but declining trend	Increasing support for collective attribution

Over the three-year period, a general decline in reported familiarity with AI was observed across both educational groups. However, participants without a bachelor's degree consistently reported slightly higher familiarity with AI tools than their graduate counterparts. While 76.0% of non-graduates indicated prior knowledge in 2023, only 73.7% of graduates did the same. By 2025, the gap persisted, with 52.5% of non-graduates and 49.1% of graduates reporting familiarity.

This subtle yet consistent difference may reflect divergent exposure pathways: whereas graduates may encounter AI primarily through academic or professional channels, non-graduates may be more frequently engaged through informal,

everyday interactions with digital platforms and consumer technologies. The data suggest that familiarity with AI is no longer exclusively cultivated within higher education, and that the democratization of digital experiences may be narrowing experiential gaps across educational layers.

Differences in levels of interest by educational background were particularly marked in the domain of entertainment. Non-graduates began with higher levels of enthusiasm (mean = 3.64 in 2023) than graduates (mean = 3.47), and although both groups exhibited declining interest over time, the initial gap suggests non-graduates may view AI's creative applications with fewer preconceptions or less critical filtering. By 2025, interest converged at similarly low levels (means of 2.68 for non-graduates and 2.75 for graduates), suggesting a shared disenchantment over time.

In contrast, interest in professional applications of AI revealed a narrower divergence. Graduates maintained a slightly higher overall interest, especially in 2023 (mean = 3.49), and their responses showed a more pronounced decline in enthusiasm by 2025. Non-graduates displayed greater variability and less intensity in their views, with lower *very interested* responses across all years.

These differences may reflect the influence of formal education in fostering both initial optimism and subsequent critical detachment, especially as students with a bachelor's degree may be more attuned to the structural, ethical, or technical limitations of AI in professional settings.

About societal readiness for AI, both groups expressed increasing skepticism. However, non-graduates tended to report slightly lower levels of perceived preparedness, with average scores falling from 2.12 in 2023 to 1.88 in 2025. Graduates followed a similar trajectory, albeit with slightly higher initial evaluations. These results may be interpreted in two ways. On the one hand, graduates' proximity to institutional discussions, whether academic, governmental, or industry-based, may contribute to a somewhat more measured evaluation of preparedness. On the other, the lower confidence among non-graduates may signal greater alienation from institutional narratives or heightened skepticism regarding public infrastructure and policy effectiveness.

Differences in perceptions of authorship attribution in AI-assisted creations were also evident. Students without a bachelor's degree increasingly supported a collective attribution model (*All of the above*), with 57.5% endorsing this option in 2025. In contrast, graduates showed declining support for this view, with only 43.4% selecting the same response in the same year. This shift among graduates coincided with a marked rise in support for recognizing specific contributors—particularly dataset authors—suggesting a move toward a more granular and legally nuanced understanding of authorship. Moreover, graduates were more likely to select *none* as a valid attribution by 2025 (13.2%), compared to just 5.0% of non-graduates. This may reflect a growing philosophical or legal skepticism among the more academically trained cohort, pointing to deeper engagement with questions of originality, agency, and authorship in generative AI.

Taken together, these findings suggest that educational background mediates students' perceptions of AI along multiple axes—from enthusiasm and critical engagement to ethical positioning and interpretative depth. Students with a bachelor's degree tend to demonstrate more nuanced, critical, and at times skeptical evaluations, particularly in areas requiring ethical attribution or systemic assessment. Their responses suggest stronger engagement with the implications of AI from a regulatory, aesthetic, and intellectual standpoint.

Conversely, non-graduate students often express greater initial enthusiasm and broader attributional inclusivity, potentially reflecting more experiential, pragmatic, or emotionally driven engagements with AI technologies. Their continued support for collective authorship and skepticism toward societal preparedness underscores a value-based, socially conscious orientation that warrants deeper exploration.

Table 5-6 Summary of educational background-based comparative analysis concerning limits and benefits. Source: (Moriniello F., 2025)

Dimension	**Graduate Perspective**	**Undergraduate Perspective**
Dehumanization of Creativity	Consistently concerned	Fluctuating stance with heightened concern
AI as Assistant for Complex Tasks	Declining optimism	Consistently optimistic
Job Displacement Concern	Stable level of concern	Growing level of concern
Job Creation	Moderately optimistic	Less optimistic overall

Cognitive Decline Risk	Increasingly high concern	Rising moderate concern
Cognitive Enhancement	Growing skepticism	Persistently skeptical
Loss of Manual Skills	Heightened concern over time	Consistent concern
Personalized Skill Development	Shift from neutral to negative perception	Mixed views, ranging from slightly optimistic to pessimistic
Threat to Human Autonomy	Moderately increasing concern	Comparable concern level to graduates
Enhancing Relational Freedom	Worsening concern from moderate to severe	Persistently severe concern
Valuing Craftsmanship	Declining from slightly optimistic to neutral	Gradual shift from neutral to slightly optimistic
Valuing Design-Based Art	Fluctuating evaluations, mostly neutral	Slightly pessimistic but stable
Assistive Tool for Disabilities	Moderately optimistic	Similar to graduates
Increased Difficulty for Disabled	Slightly pessimistic	Comparable to graduates

From a research perspective, these results indicate that educational context is a significant variable in shaping public understanding and ethical positioning toward AI. As such, future studies and pedagogical initiatives should consider differentiated strategies for AI literacy, emphasizing tailored ethical discourse, critical reflection, and accessible pathways for engagement across diverse educational backgrounds.

This next section examines differences in perceptions of artificial intelligence (AI) between students with and without a bachelor's degree, structured across six thematic domains. While responses across both groups reflect a mix of optimism and concern, distinct patterns emerge based on educational attainment.

Students without a bachelor's degree consistently expressed greater apprehension regarding AI's potential to marginalize human input in creative work. Their responses reflected stronger agreement with statements related to dehumanization of creativity (mean = 3.56) compared to bachelor's degree holders (mean = 3.23). This heightened sensitivity may stem from a perceived lack of institutional or professional insulation, making them more vulnerable to the erosion of uniquely human contributions in creative industries.

Concerns about AI-driven job displacement were notably higher among non-graduate participants (mean = 4.25), compared to those with a bachelor's degree (mean = 3.79). This suggests that individuals without formal academic credentials may feel more exposed to the precarity brought by automation. Conversely, bachelor's degree holders reported greater belief in AI's potential to create new roles (mean = 3.60 vs. 3.23), indicating a more balanced or hopeful perspective on technological change. These contrasting views may be shaped by differing access to career pathways and institutional discourses that frame AI as an opportunity for innovation.

Students without a degree also demonstrated greater concern regarding cognitive and somatic impacts of AI. They registered stronger agreement with the idea that AI would lead to cognitive decline (mean = 4.13 vs. 3.30) and diminish manual skills (mean = 4.15 vs. 3.46). These elevated concerns suggest a more defensive orientation, possibly rooted in a greater reliance on embodied and practical competencies in their current or anticipated career trajectories. While both groups expressed skepticism regarding AI's capacity to enhance human intellect, this was particularly marked among non-graduates (mean = 1.91 vs. 2.54), pointing to deeper doubts about the epistemological benefits of AI systems.

Regarding autonomy, non-graduate students reported slightly stronger concerns about AI infringing on individual freedom and control (mean = 3.38), compared to bachelor's degree holders (mean = 2.98). While belief in AI's potential to improve human relationships remained low across both groups, the shared skepticism (with means below 2.5) suggests that emotional intelligence and interpersonal connection are widely seen as domains where AI should not—and perhaps cannot—substitute for human engagement.

Bachelor's degree holders expressed a stronger belief that AI could prompt renewed appreciation for human craftsmanship (mean = 3.39) than those without a degree (mean = 3.12). Similarly, they were slightly more likely to believe that design-based artistic practices would be positively revalued in the wake of AI's rise (mean = 2.95 vs. 2.60). These differences may be reflective of greater exposure to theoretical discussions about art, originality, and authorship within formal education settings. Nonetheless, both groups demonstrated a degree of skepticism toward AI's role in artistic production.

Both educational groups acknowledged the utility of AI as an assistive tool for individuals with disabilities, with comparable mean scores (3.63 for graduates, 3.56 for non-graduates). However, participants without a degree were more inclined to perceive AI as potentially increasing difficulties for these populations (mean = 2.72 vs. 2.32). This may reflect a more cautious stance on the unintended consequences of technological design and inclusivity, possibly informed by broader concerns about systemic accessibility or marginalization.

This analysis explores the differential perceptions held by students with and without a bachelor's degree regarding the artistic, ethical, and cultural implications of artificial intelligence (AI). Although certain views converge across educational backgrounds, particularly in areas of concern, several key divergences illustrate how formal education may shape critical engagement with AI-generated content.

Students with a bachelor's degree showed a sharper increase in the belief that AI-generated outputs cannot be recognized as art, with their mean score rising from 3.25 in 2023 to 4.11 in 2025. This trajectory, slightly steeper than that of non-graduates (3.28 to 4.03), suggests that academic training may enhance critical awareness of the boundaries between human and machine-authored creativity. Similarly, while both groups grew increasingly skeptical of AI as an artistic tool, bachelor's students displayed a slightly greater decline in support (2.91 to 2.40) than their peers (3.04 to 2.43), possibly indicating a more stringent conception of artistic authenticity cultivated through formal education.

Table 5-7 Summary of educational background-based comparative analysis of AI in creative domains. Source: (Moriniello F., 2025)

Dimension	**Graduate Perspective**	**Undergraduate Perspective**
Legitimacy of AI-Generated Art	Gradual and steady increase in skepticism	Comparable trajectory of increasing skepticism
AI as Artistic Tool (Human-Guided)	Fluctuating between neutral and negative evaluations	Decline from neutral stance to predominantly negative
Copyright Infringement Concern	Persistently high level of concern	Consistently high concern, similar to graduates
Creative Enhancement via Remixing	Greater skepticism regarding remixing as innovation	Mild skepticism, more reserved in critique
Substitution Risk (AI Replacing Creativity)	Moderate and consistent concern	Comparable concern level to graduates

AI as Catalyst for Human Creativity	Initial optimism followed by notable decline	Initially less optimistic, with a similar downward trend
Homogenization of Aesthetics	Gradual increase in concern	Sharper and more pronounced increase in concern
Innovation in Aesthetic Paradigms	Stable position near neutrality	Declining trend from initially positive to negative views
Misinformation Risk	Growing and strong concern	Slightly higher concern compared to graduates
AI and Critical Visual Literacy	Shift from neutral to cautiously positive evaluations	Range from slightly positive to slightly negative

Concerns regarding copyright infringement rose steadily across both groups, culminating in an identical mean score of 4.30 in 2025. However, graduates exhibited a slightly earlier onset of caution, pointing to the possible influence of academic exposure to intellectual property discourse. Likewise, perceptions of creative enhancement via remixing declined more rapidly among bachelor's students, suggesting that educational contexts may reinforce skepticism toward algorithmic creativity perceived as derivative or homogenizing.

The belief that AI could substitute human creative capacity remained relatively stable across both groups, with minimal divergence in end values by 2025. This continuity underscores a shared apprehension about creative obsolescence, which appears to transcend educational distinctions. However, views on AI's capacity to foster creative innovation differed more clearly. Non-graduates showed a sharper drop in optimism (3.28 to 2.75), while graduates exhibited a more moderate decline (3.42 to 2.91), possibly reflecting longer-lasting trust in human-AI synergy among those with greater academic exposure.

Visual culture emerged as another domain of strong convergence. By 2025, both groups registered high concern about the homogenization of aesthetics, though non-graduates expressed the most pronounced worry (mean = 4.20). In contrast, belief in AI's capacity to generate new aesthetic models diverged: while bachelor's students maintained a relatively steady outlook (mean = 3.18), non-graduates became markedly more disillusioned (3.60 to 2.73), suggesting educational background may buffer against disillusionment regarding aesthetic innovation.

The fear that AI-generated images could be used to mislead was shared and growing across both groups, with particularly intense concern expressed by non-bachelor students (mean = 4.83) by 2025. This convergence underscores the urgent

need for broad-based initiatives in media literacy and visual ethics, regardless of educational status. Notably, perceptions of AI's potential to enhance critical visual literacy diverged slightly: bachelor's students reported a mild increase in confidence (3.25 to 3.42), while non-graduates showed a decrease (3.28 to 2.90). This may indicate that formal education reinforces students' capacity to navigate and critically interpret AI-generated visual content.

In summary, while many concerns, especially those surrounding misinformation and aesthetic standardization, are widely shared, students with a bachelor's degree tend to display more sustained critical engagement and measured optimism in certain domains. In contrast, students without a degree often exhibit stronger skepticism, particularly in relation to creative innovation and authorship. These differences underscore the importance of integrating critical AI literacy into educational curricula to ensure that all learners, regardless of academic background, are equipped to engage meaningfully with the evolving landscape of machine-mediated creativity.

5.4. Voices Between the Lines: An Open-Ended Exploration

The open-ended responses gathered from students provide additional insight into evolving perceptions of artificial intelligence (AI), offering a more nuanced understanding of the topic beyond what is captured by closed-ended survey items. In broad terms, these qualitative responses largely reflect and reinforce the patterns observed in the quantitative data. The subsequent section outlines the key thematic categories that emerged from the analysis, each illustrated through selected student quotations. Across the three-year period, the discourse demonstrates a clear progression in both thematic sophistication and emotional intensity, shifting from tentative curiosity in the early stages to more critically engaged reflections, and in some instances, to overtly oppositional positions.

In 2023, student reflections centered on a cautious yet open perspective, particularly in the artistic domain. A recurring sentiment emphasized the role of AI as a complementary rather than a substitutive instrument in creative work: transl. *In my opinion, AIs should be used as a support tool and never as the base for*

completing the final work. Original: *Las IAs en mi opinión deben ser utilizadas como una herramienta de apoyo y nunca como el soporte para realizar la obra final*.

This stance reflects a foundational belief in the unique value of human creativity, attached for example to failure, intuition, qualities perceived as unattainable by algorithmic systems.

Simultaneously, students articulated early anxieties about the dehumanizing potential of AI in artistic practice: transl. *AIs will make novice artists lose imagination because they will replace their imaginative capacity*. Original: *Las IAs harán perder imaginación a artistas noveles ya que sustituirán la capacidad imaginativa*.

These remarks capture emerging fears of cognitive atrophy and the erosion of imaginative agencies. Calls for legal and ethical oversight also emerged in this early phase: transl. *It's all a matter of regulation and establishing principles*. Original: *Todo es una cuestión de regulación y de establecer principios*. Notably, students situated AI within a broader historical arc, drawing comparisons with earlier disruptive technologies: transl. *Something similar happened when photography appeared or when the internet reached our hands*. Original: *Algo parecido pasó cuando la fotografía apareció o el internet llegó a nuestras manos*.

By 2024, these concerns became more conceptually structured and emotionally charged. Students continued to assert the irreplaceability of human creativity: transl. *Human creativity cannot be replicated... life experience makes a work unique*. Original: *La capacidad creativa del ser humano no puede ser replicada... la experiencia vital hace que una obra sea única.*. In parallel, the perceived risks of AI-generated misinformation and visual manipulation gained prominence: transl. *The generation of increasingly realistic images… are taken as real... and controversies arise from fake images*. Original: *La generación de imágenes... cada vez más realistas y creíbles... se toman como reales... y se crean polémicas a raíz de una imagen falsa*.

In 2024, a more systemic critique of AI's socio-economic implications also began to emerge, particularly around labor displacement and capitalist exploitation: transl. *Companies use AI to save costs and fire workers... we must change the system*. Original: *El uso empresarial de la IA es para ahorrar costes y despedir trabajadores... debemos cambiar el sistema*. Moreover, concerns about institutional and societal unpreparedness were confirmed in multiple responses: transl. *It will be a matter of educating ourselves and regulating misuse* Original: *Será cuestión de educarnos y regular los malos usos*.

By 2025, the discourse evolved into one marked by urgency and emotional intensity. Students explicitly demanded immediate regulatory action: transl. *AI needs regulation now, it is plagiarizing millions of authors*. Original: *la IA necesita una regularización ya, está plagiando a millones de autores*. Critiques of AI-generated Art became more assertive, foregrounding its perceived lack of ethical and emotional depth: transl. *Art is influenced by intense human experiences... therefore AI-generated works cannot be considered art* Original: *El arte está influenciado por las experiencias humanas cargadas de intensidad... por ello las obras creadas por IA no pueden considerarse arte*.

New concerns also surfaced during this period, particularly around environmental sustainability. The ecological footprint of generative AI systems was explicitly criticized: transl. *To generate a 100-word response, ChatGPT uses half a liter of water.*Original: *Para generar una respuesta de unas 100 palabras, ChatGPT utiliza medio litro de agua*. Furthermore, anxieties extended to the loss of cognitive autonomy and manual competence: transl. *A monotonous, anesthetized society unable to think for itself*. Original: *Una sociedad monótona, anestesiada e incapaz de pensar por sí misma*.

Nevertheless, not all voices aligned with this more alarmist posture. Some students advocated for a mediated relationship between human creativity and AI support: transl. *I mainly believe in the symbiosis between AI and artist* Original: *Creo principalmente en la simbiosis entre IA y artista*. This position articulates a vision in which AI can enhance, but not replace creative agency, provided clear boundaries are maintained.

5.5. Echoes and Tensions

The quantitative analysis portrays students' perceptions of AI from 2023 to 2025 with a clear shift. For the sake of clarity, the key findings have been summarized in the following table. The results have been grouped according to five thematic areas: *AI Self-Reported Knowledge, AI in Society*, *AI and the Future of Work*, *AI and Authorship*, and *AI and Creative Professions*. Table 1 summarizes the main findings by theme, which are then discussed in depth with reference to limited existing literature and broader historical contexts. Given the novelty of this topic, only a handful of rigorously peer-reviewed studies are yet available for comparison.

Table 5-8 Summary of key findings. Source: (Moriniello F., 2025)

Theme	***Key Findings (2023–2025)***	***Implications and Research Needs***
AI Self-Reported Knowledge	Progressive decline in perceived familiarity with AI tools, despite increasing exposure.	Investigate knowledge paradox: why increased exposure may not translate to confidence or literacy. Assess AI literacy levels.
AI In Society	Societal readiness perceived as low and steadily declining. Emerging concerns about AI's impact on education. Continued positive perception regarding innovation and AI enhancing human cooperation.	Develop frameworks to foster critical AI literacy in education. Research public understanding and trust in AI governance.
AI & Future of Work	Rising anxiety about job displacement and loss of manual/cognitive skills. Moderate decline in interest in AI for professional use.	Explore future-proofing strategies for creative careers. Research psychological impacts of automation on students and professionals.
AI & Authorship	Heightened concern over originality and ownership. Increasingly fragmented views on who should be credited for AI-assisted Artworks.	Need for clear legal and ethical frameworks on authorship and attribution. Examine how perceptions evolve across disciplines.
AI & Creative Process	Growing skepticism toward AI-generated Art. Concerns about the loss of artistic authenticity and the homogenization of aesthetics.	Study the evolving definition of artistic legitimacy in hybrid practices. Analyze acceptance patterns through historical parallels.

First, self-reported familiarity with AI fell from 74.4% in 2023 to 50.5% in 2025. This pattern is in accordance with other studies (Chen, 2025) (Golding, 2024) and it may partly reflect that, over time, our survey reached students from a wider variety of backgrounds, many of whom have had less formal exposure to AI tools. It may also indicate that, as AI systems become more complex, students no longer consider simple interactions, such as using ChatGPT, to count as real *knowledge* of AI. In other studies, a vast majority of students reported familiarity with generative AI tools (Ahmed, 2024) (Almassaad, 2024) (Johnston, 2024). In contrast, specialized audiences, like computer-science students, still report near-universal familiarity with generative AI tools, confirming that discipline and prior training strongly influence self-assessed AI literacy (Amoozadeh, 2024).

Societal readiness for AI was consistently perceived as low, with students' confidence in institutions' ability to respond effectively to AI's rise declining steadily over the three-year period. This growing pessimism likely reflects increased awareness among students of the rapid and far-reaching impact of AI on culture, ethics, and everyday life. As AI technologies become more embedded in creative industries, education, and public discourse, respondents identified a widening gap between technological advancement and the societal frameworks needed to govern and critically engage with it. Notably, while students maintained a relatively positive view of AI's potential to drive innovation and enhance human cooperation, they simultaneously expressed concern about its implications for education and the lack of institutional readiness.

The findings point to a deepening tension between technological capability and institutional preparedness, suggesting that current systems, ranging from universities to legal and regulatory bodies, are struggling to keep pace with AI's transformative trajectory.

These student perceptions resonate with broader concerns in recent scholarship and public policy. *AI literacy* and public preparedness have been identified as pressing challenges (Buckingham, 2019). Younger generations may be digitally literate, but they often lack critical frameworks to understand AI's societal implications. In our study, students' harsh judgment of societal readiness underscores this point. By 2025, over one-third of respondents rated society *not at all prepared* echoing warnings that an education gap leaves even digital natives ill-equipped to critically appraise AI. As other studies suggest (Ng, 2021) (Chiu, 2024) (Veldhuis, 2024), there is an urgent need to develop AI literacy curricula that encompass not just technical skills but also ethical and cultural awareness. Our findings reinforce that call: students' sense that the general public, and perhaps policymakers, are unprepared to confront AI's implications, from misinformation to bias and beyond.

Furthermore, students' declining confidence in societal readiness may be influenced by the highly visible debates and events surrounding AI in recent years. By 2024 and 2025, media coverage of generative AI's impacts had intensified, including controversies over deepfakes, copyright lawsuits, and calls for regulation. Their pessimism may reflect a view that governance and law have not caught up, for example data scraping occurring faster than consent frameworks. As it is

argued, generative AI blurs traditional notions of moral responsibility when algorithmic systems make creative decisions, requiring a rethinking of accountability in society's institutions (Floridi, 2023). Participants' perspectives mirror this concern: if society lacks institutional preparedness now, there is a risk of reactive or insufficient governance as AI's influence grows.

In summary, students increasingly doubt society's readiness for the AI era, underscoring the importance of proactive measures. Educational programs must expand to foster critical AI literacy, and policymakers should engage with youth perspectives when crafting AI regulations. The finding that *almost no one* in the survey saw society as well prepared by 2025 is a stark reminder that alongside technological adoption, we need cultural and institutional adaptation. Future research could explore in more depth why students feel this disconnect, for instance, do they see specific gaps in policy, or mistrust how media portrays AI? Practically, universities, as microcosms of society, might address this by incorporating ethical AI training and open forums to discuss AI's social impacts. As one recent study notes, university students appreciate AI's potential benefits yet worry about its effect on societal values (Chan, 2023). Our findings amplify that latter concern: without deliberate efforts, society may be sleepwalking unprepared into an AI-driven future. Addressing this will require collaboration between educators, industry, and government to build informed, critical, and ethical engagement with AI.

One of the most pronounced trends in the data is growing anxiety about AI's impact on future careers and skills. Over the three years, students shifted from cautious optimism to a near-consensus that AI poses a threat to jobs in creative fields. The proportion that *AI will reduce job opportunities* climbed to over 80% by 2025, with the average agreement level rising from 3.88 to 4.19. Many students clearly fear that automation is *not merely a supplementary tool but a potential replacement* for human labor. This aligns with aligns with public discourse and concern about AI-driven job displacement reported in media (Forum, 2023), where creative workers raised alarms about AI platforms infringing intellectual property. Students are clearly attuned to these societal debates. It is notable that 90% of our respondents by 2025 agreed AI poses an authorship and copyright challenge, indicating awareness of legal/ethical disputes. What is especially telling is that students in art and design – professions long thought safe from automation due to their creativity – are now bracing for disruption. Until recently, a common assumption was that creative jobs were shielded from AI, but the advent of

powerful generative models has changed everything, triggering speculation among designers, writers, and artists about their career futures. Our participants' worries reflect this new reality.

In parallel, students grew more concerned that reliance on AI could erode human skills and value. By 2025, over 80% believed AI tools might cause a decline in human cognitive abilities, for example critical thinking, problem-solving). Strong agreement with this *risk of cognitive decline* spiked, suggesting that initial excitement about AI's convenience gave way to worry about intellectual complacency. Likewise, concern that frequent AI use might diminish manual, or craft skills rose steadily (mean agreement reaching 4.16). Students increasingly felt that if they outsource too much creative labor to AI, they could lose the embodied know-how and artistry that define creative professions. This finding is in line with commentary that generative AI might *diminish manual and conceptual skills* in the long run (Salari, 2025). It also echoes the cautionary notes of art educators: for example, in one study it is observed that while AI can inspire ideation, over-reliance on it could impede students' development of fundamental artistic skills (Ansone, 2025). In our data, the decline in enthusiasm for AI as an *assistant* suggests students are becoming careful of leaning too much on these tools. They recognize AI's utility for tedious tasks, but fear overreliance and skill erosion if they become too dependent.

Broader economic research supports the students' mixed outlook. As an analysis in 2023 estimated that around 26% of tasks in arts, design, and entertainment could be automated by generative AI (Hatzius, 2023), highlighting legitimate grounds for concern in creative occupations. At the same time, analysts also note AI may create new roles and efficiencies – a nuance some of our respondents acknowledged. In fact, our survey found that while most see job *losses*, a modest majority initially also saw potential for job *creation or transformation* through AI, though confidence in that potential ebbed by 2025 (mean agreement fell from 3.62 to 3.43). This ambivalence tracks with global discussions: AI-driven threats to creative jobs now dominate, yet there are also emerging *opportunities* in productivity and new creative tech industries. For example, some designers are learning to become *AI prompt engineers* or using AI to accelerate content production, potentially carving out new specializations. Our participants' diminishing optimism, however, indicates a skepticism that such new opportunities will fully offset the losses – they are not convinced that the math will balance in their favor.

It is also notable that interest in using AI for professional purposes declined among students, despite AI's publicized benefits in the workplace. In other words, even if AI could make their jobs easier or more efficient, students worry about long-term consequences: Will using AI make their own skills less relevant? Will it homogenize creative output and thus devalue their personal artistic voice? These concerns were voiced in qualitative responses, where students feared AI may diminish the perceived value of human effort in creative industries. They are witnessing how automated content generation might flood the market with passable art or design, potentially lowering the premium placed on human-made work. This insight aligns with theories of technological unemployment in creative fields, where an abundance of automated output could drive down the economic value of human creators' labor (Acemoglu, 2022).

Implications for future work and education are clear. First, there is a need for future-proofing creative careers. This could involve educational institutions updating curricula to emphasize uniquely human creative skills - for instance, conceptual development, interdisciplinary thinking, and emotional expression - that AI cannot easily replicate. Our findings already indicate students differentiating what AI can and cannot do well, suggesting curriculum developers should reinforce those human strengths. Second, policymakers and industry leaders should address the labor market transition concerns. As one response noted, the data call attention to an urgent need for labor policy reform to manage the impact of automation. This might include supporting creative workers in reskilling or in leveraging AI as a complement rather than a competitor. Encouragingly, some in industry report that when used thoughtfully, AI *enhances* team creativity and efficiency rather than replacing jobs but achieving this outcome requires active adaptation and learning. Students' attitudes suggest they will welcome guidance on how to integrate AI into their work safely. As educators, we should investigate pedagogical strategies that let students explore AI's capabilities while reflecting on their own creative process. Going forward, *longitudinal rese*arch could track how these students' career outcomes actually unfold: Will their current fears translate into career hesitancy, or will they adapt and find new opportunities with AI? The tensions identified here, between efficiency and originality, convenience and skill mastery, will likely shape the evolution of creative professions in the coming decade.

The question of authorship in AI-generated creations emerged as a major concern for students, reflecting deep tensions between new technological practices and longstanding cultural norms. Our results show that by 2025 an overwhelming 90% of students agreed that AI blurs or violates traditional authorship and copyright norms. This marks a significant rise in concern from 2023, and it aligns with the increasing public scrutiny of how generative AI models are trained on human-made data. Students are evidently aware that opaque mechanisms underlie these models, which often scrape artists' and writers' works without clear attribution or consent. Such awareness is likely informed by high-profile critiques, like Crawford and Paglen, that these models not only appropriate content but also may perpetuate dominant biases by remixing existing data. In our study's open responses, many students voiced ethical qualms about AI *stealing* art styles or regurgitating others' creations. This explains why the most consistently negative ratings in the survey were for copyright issues. The critical focus on this issue indicates students view the ownership of AI-generated content as unresolved and troubling.

Despite nearly unanimous concern about AI's impact on intellectual property, students' views on how to assign authorship for AI-mediated works are diverse and evolving. Throughout 2023–2025, the most popular stance was that authorship is collective, credit should go to a combination of the human user, the model's developers, the dataset creators, and even the original data contributors. By 2025, however, that majority shrank with growing fragmentation in opinion. Notably, a small but rising faction of students took the radical view that *None* should be credited for AI-generated art. This could signal a expanding philosophical stance that if an artwork is produced by an autonomous system using aggregated culture, it belongs to no individual. It is essentially treating it as a public domain or algorithmic product rather than human creation. Such a view upends conventional authorship, and, interestingly, aligns with the idea of the *death of the author* in extreme form (Barthes, 1968). Alternatively, students choosing *no one* may be making an ethical point: since the AI training process often did not obtain artists' consent, they might be uncomfortable assigning authorship at all, seeing the output as tainted or illegitimate. In any case, the fracturing of opinions on authorship attribution highlights the ambiguity that AI has introduced. There is a pressing need for clearer legal and educational frameworks to define ownership in hybrid creative processes. The absence of such clarity today leaves students puzzling over questions like: Is AI a tool or a co-creator? Do the original artists

whose works trained the AI deserve royalties? These are active debates in copyright law and ethics right now (Smits, 2022).

This tension between remunerating original creators and the long-standing human tradition of sharing and remixing ideas is a central theme in the authorship discourse. On one hand, our participants echo the call for compensating or crediting artists whose work feeds AI models. They would likely agree with the majority of professional artists surveyed by a recent study (Lovato, 2024), who found that most artists want disclosure of training data and reject the notion that AI outputs belong to the tech companies. In that survey of 459 artists, concerns about who profits from AI-derived art were paramount, mirroring our students' worries. Both artists and students seem to demand greater fairness, whether through copyright reforms, licensing fees, or attribution, to ensure AI doesn't become a zero-sum game where tech firms gain, and creative individuals lose. Indeed, more than 75% of artists in the study felt that the creators of AI models should not own the images those models generate. That sentiment is likely shared by students who are training to become creative professionals themselves.

On the other hand, there is recognition that creativity has *always* built on the past. Human culture is fundamentally a remix culture (Lessig, 2008). Examples abound in the Arts: visual artists have engaged in appropriation for over a century, from Picasso's collages to Warhol's silkscreens of copyrighted photographs, often without direct remuneration to the original image-makers. In electronic music, sampling and remixing are core techniques. Whole genres like hip-hop and EDM were founded on repurposing snippets of existing recordings. Pioneering DJs and producers in the 1980s and 90s famously sampled funk and soul records to create new works, a practice that eventually sparked legal battles but also gave birth to transformative new music. Many students are aware of this history: one might note how the *Amen break*, a 6-second drum loop from 1969, was reused in thousands of tracks, essentially a case of uncredited cultural sharing that nonetheless drove innovation. Similarly, lo-fi music culture thrives on a kind of nostalgic remixing. These artists deliberately use vintage sounds, tapes, or even fragments of older media to evoke atmosphere. This *borrowing as creativity* attitude positions art as a communal textile rather than individual property. There is a valid argument that overly rigid enforcement of authors' rights can stifle creativity, whereas permissive sharing can spur new art forms.

Balancing these two sides, protecting artists and fostering remix culture, is challenging. This issue was already critically addressed in Walter Benjamin's seminal essay *The Work of Art in the Age of Mechanical Reproduction* (Benjamin, 1935), where he explores the transformation of aesthetic experience and the concept of authenticity in the context of technological reproduction. The Implications for authorship moving forward involve both policy and pedagogy. Legally, there are moves afoot in various jurisdictions to update copyright for AI. The U.S. Copyright Office in 2023 clarified that AI-generated images cannot be copyrighted (Office, 2023), and the EU is debating training data exceptions and licensing (Commission, The AI Act Explorer, 2024). Educationally, discussing cases of past and present appropriation could help students situate AI in the continuum of artistic practice. For instance, examining how artists like Sherrie Levine in the 1980s re-photographed others' photographs to challenge authorship might provoke insight (Levine, 1981): Levine's work was controversial, yet it became accepted as Art that comments on authorship. Likewise, AI Art forces us to reconsider what it means to be an author. It can be proposed moving toward a model of distributed or networked authorship, where credit is shared, and creativity is seen as an ecosystem rather than a single moment of genius.

The integration of AI into creative professions, and whether AI-generated content qualifies as Art, was a topic of heated opinions among the surveyed students. The data show a clear trend of growing skepticism toward AI's creative legitimacy, consolidated around the belief that artistic authenticity is inherently tied to humanity. Many respondents argued that art requires human intention, emotional depth, and context, qualities they believe current AI lacks. This suggests that the notion of *hybrid creativity*, AI as collaborator, lost credibility for a majority, replaced by a stricter standard that true art must originate from human creative faculties. These attitudes strikingly parallel historical debates from the 19th and early 20th centuries about photography's status as Art. When the camera was first invented and began to proliferate, many traditional artists and critics were dismissive of photography as a mere mechanical process. French poet Charles Baudelaire, writing in 1859, famously scoffed at photography's artistic ambitions, calling it *the refuge of failed painters* and urging that it remain a servant to the sciences and arts, not an Art itself (Baudelaire, 1955). Painters of that era feared that the camera, which could capture reality with unprecedented accuracy, would grab the role of painting or cheapen it. Similarly, our students' reservations about AI Art often stem from seeing it as *computer-generated*, lacking a soul or an original vision. Just as early photographs were criticized for being produced by a machine

rather than the artist's hand, AI art is criticized for emanating from algorithms rather than human imagination. In the late 1800s, the Photographic Society had to fight for photography to be exhibited and accepted as fine Art. It took decades for perceptions to shift. By the mid-20th century, photography had gained recognition as an Art form, but not before photographers intentionally developed styles, design thinking and project development to demonstrate artistry beyond the machine's default output. The trajectory of photography offers a telling analogy and perhaps a hopeful precedent for AI in creative professions. Initially, photographers like Alfred Stieglitz in the early 1900s had to work hard to prove that photography was more than an automated record – that it involved vision, choices, and creativity from the operator. Over time, society acknowledged that the artist's intention and skill could manifest through the new tool. Today, no one questions that photography can be art; the discourse shifted to how it can be used artistically. History showed that artists adapted: painters did not disappear; instead, they evolved and some credit photography's invention as one factor pushing painting toward Impressionism and abstraction, realms where human touch mattered more. Likewise, rather than rendering creatives obsolete, AI might redefine the artist's role. It is instructive to note that artistic practices have consistently adapted to and been transformed by technological innovation (Etro, 2023). Early 20th-century painters who embraced photography, not as competition, but as a reference tool. Artists like Degas and Mucha used photographs for their paintings. A similar situation has been attributed to the use of the camera obscura, which, according to David Hockney's thesis, was employed by painters such as Caravaggio, Canaletto Rembrandt, and Vermeer (David Hockney, 2016). In the same way, some designers today use AI-generated images as starting points or inspiration, then build them upon human refinement.

Finally, drawing on the historical analogy one more time: when photography emerged, some said *painting is dead*, but in reality, painting reinvented itself and photography opened new Art avenues. Today, one hears similarly sensational statements that AI will replace artists. For creative professions broadly, the implication is that adaptation is key. The strong skepticism noted in our data could either entrench into a schism between *AI Art* and *Human Art*, but the future may lie in redefining creative work rather than such a binary, or it could gradually resolve as the two integrate. A parallel can be drawn with how painters and photographers eventually found separate but overlapping domains, each medium excelling in different aspects of image-making. Human artists might focus on the conceptual and interpretative aspects (the *why* of Art), leaving some of the production (the *how*) to AI tools, not unlike how architects use CAD software: the computer aids in

drafting, but the vision is of the architects. Therefore, it is likely that the creative professions will not disappear but will transform roles may shift, an illustrator might become more of an art director who supervises AI outputs. Furthermore, the value proposition of human creators may increasingly center on what humans alone can provide. There is early evidence of this in fields like graphic design, where designers using AI can iterate concepts faster, but the curation and final tweaks rely on human sensibility. If such a balance is reached, AI-generated content could be seen as another medium or technique under the artist's control. This would require, however, creative professionals to acquire new competencies, knowing how to steer AI, curate its outputs, and infuse them with human meaning. It also requires creative industries, studios, galleries, publishers, to develop standards for transparency, in order that AI-assisted works are acknowledged, and for merit, so that originality and effort are still recognized even if tools are used.

In terms of future research, it would be valuable to track professionals' attitudes as they gain direct experience with AI tools. Our study captured students on the cusp of entering creative industries; a longitudinal study following them into their careers could reveal whether direct practical engagement softens their stance or validates their fears.

Additionally, the analogy with photography suggests researching the socio-cultural processes of acceptance: What factors lead a new technology to be embraced as legitimate Art making? Is it improvements in technology's output? Changes in audience perception? Understanding these could inform how we educate and prepare creatives.

6
Impact of AI Through Art Creation and Exhibitions

6.1. Background

To contextualize the background of this practice-based research, a selection of the author's early exploration works is presented. These initial experimentations were undertaken prior to the widespread diffusion of AI technologies as mainstream creative tools.

6.1.1. Exploring Machine Vision of Graphic Elements: The *From Point to Line to Plane to Color* Project

The first example is an investigation conducted between 2016 and 2017, and the creation of a project made by five images, which marked an initial incursion into the intersection of AI and visual art. This early stage of research was primarily concerned with exploring how a deep convolutional neural network perceives and reconfigures the fundamental elements of visual language - specifically, point, line, plane, and colors. The conceptual foundation of this inquiry drew inspiration from Kandinsky's seminal treatise Point and Line to Plane (Kandinsky, 1979), in which visual elements are approached as autonomous, dynamic forces capable of conveying meaning beyond representational function. In this project, such a

modernist sensibility was provocatively recontextualized through the logic of neural computation, offering a reflection on the evolving relationship between abstraction and machine vision.

To carry out this investigation, Google's Style Transfer algorithm was employed, a neural algorithm based on convolutional networks developed for automated image style transfer (Gatys, 2015) (Gatys, 2016) (Dumoulin, 2016). Diverging from the conventional use of this tool, which often involves stylistic reworkings of canonical artworks, I opted instead to construct a controlled set of minimal digital images. These compositions were not designed for aesthetic ends alone, but to interrogate how the algorithm interprets and reconstructs basic formal elements.

The resulting images were later exhibited, with the project's name *From Point to Line to Plane to Color*, at the Fondazione Feltrinelli exhibition *AltriLavori: Immagini dal pianeta 4.0* (Moriniello F. , 2017). This engagement with AI was not simply technological in nature; rather, it constituted a preliminary attempt to rethink the grammar of visual form through the perceptual model of a machine, raising critical questions about authorship, abstraction, and visual cognition.

Figure 6-1 Artwork from colors test creating fields of uniform RGB and CMY colors. Source: (Moriniello F., 2017)

The methodological design involved producing a set of synthetic test images, each 714 × 505 pixels in dimension, featuring rudimentary geometric and chromatic structures on black or white backgrounds. These included:

- Point test: a minimal dot (4 pixels) with larger circles that expanded to nearly fill the frame (Figure 6-2)
- Line test: thin horizontal lines with rectangular bands of increasing width (Figure 6-2)
- Square/Surface test: a minimal square (4 pixels) with larger circles that expanded to nearly fill the frame (Figure 6-2)
- Cross test: investigating forms generated through intersecting orthogonal lines and varying cross structures (Figure 6-2)
- Colors test creating fields of uniform RGB and CMY colors (Figure 6-1)

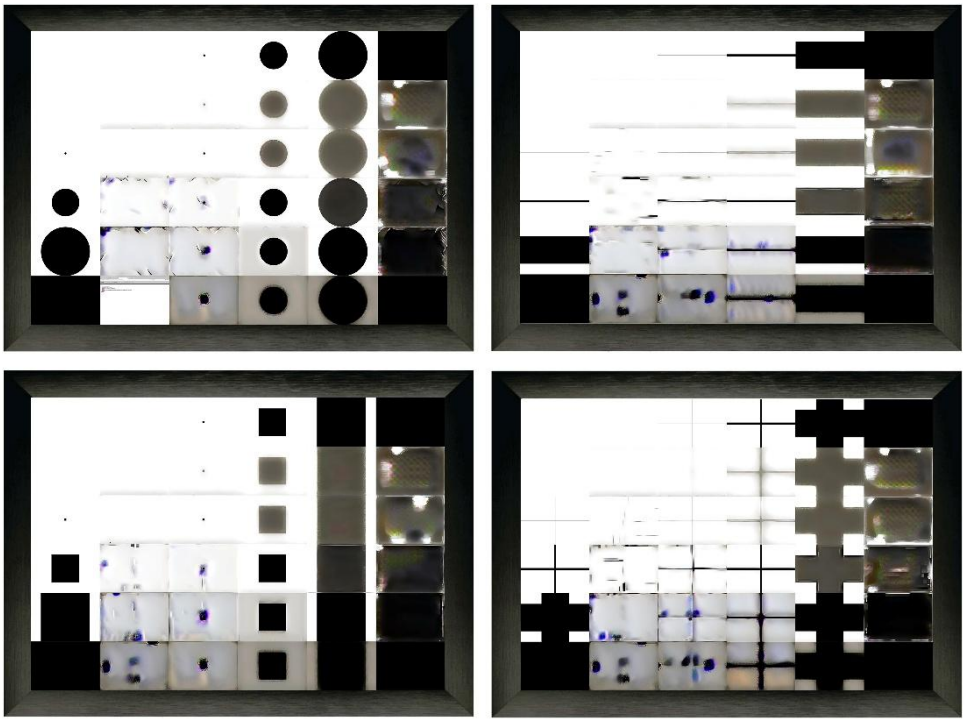

Figure 6-2 Artwork from Point, Line, Square and Cross tests. Source: (Moriniello F., 2017)

Every image was used both as a *content* and *style* input in order to generate a complete matrix of style-transferred outputs. These results were arranged in synoptic tables to facilitate comparative visual analysis. The diagonal entries, where content and style images were identical, confirmed the deterministic behavior of the system. Unexpectedly, the program crashed during an attempt to transfer a black style onto a white content image - an anomaly that resolved only after repeated iterations, suggesting sensitivity in the algorithm to extreme contrast pairings.

Three notable tendencies emerged from this body of work:

- Hybrid Formalism: The generated images frequently defied strict classification, resulting in hybrid compositions that did not replicate either the content or style input in a straightforward manner. This pointed to an internal logic of representation within the network that diverged from conventional human visual reasoning.
- Stylistic Dominance in Color Experiments: In color-based trials, style inputs often prevailed over content forms, producing images dominated by chromatic fields. Occasional exceptions, including muted or reversed hues, indicated nuanced operations within the neural weighting mechanisms.
- Computational Asymmetry: The system exhibited difficulty in handling extreme visual contrasts. Attempts to combine black styles with white content (or vice versa) initially failed or produced unexpected artefacts, revealing gaps in the network's interpretative capacity when faced with fundamental oppositions.

These early experiments suggest that neural networks do not simply reproduce human visual categories but operate according to alternative logics of abstraction. What emerges from the style-transfer process is not imitation but transformation - a process that reveals the idiosyncratic perceptual mechanics of the algorithm itself. The resulting artefacts, which might be termed *machine nonsense*, mark a conceptual space where formal language escapes both tradition and expectation.

From a practice-based perspective, these findings reinforce the notion that AI can serve as more than a tool; it may also act as an explorer in some new visual grammar. The unpredictability and opacity of neural processes compel us to rethink foundational concepts such as *content, style*, and even *form* in the context of machine vision.

This project, therefore, represents a formative phase in my broader research into understanding AI and its aesthetics, offering a critical foundation for future research grounded in the creative affordances of artificial neural networks.

6.1.2. Exploring the Visual Complexity of Contemporary Dwelling: The *G. Debord* Project

As a continuation of the exploration into the intersection of artificial intelligence and visual art, the *G. Debord* project serves as a critical examination of contemporary dwelling practices through the lens of digital culture (Moriniello F. , Da G. Debord, 2018). This work investigates how the proliferation of networked technologies - ranging from smartphones to IoT-enabled environments - restructures both the experience and representation of everyday life in the 21st century. Drawing conceptual inspiration from Guy Debord's critique of the *society of the spectacle* (Debord, 1967), the project engages with the ways in which individuals, through networked platforms, contribute to the production of *datafied* environments that render their own behaviors visible, quantifiable, and ultimately exploitable.

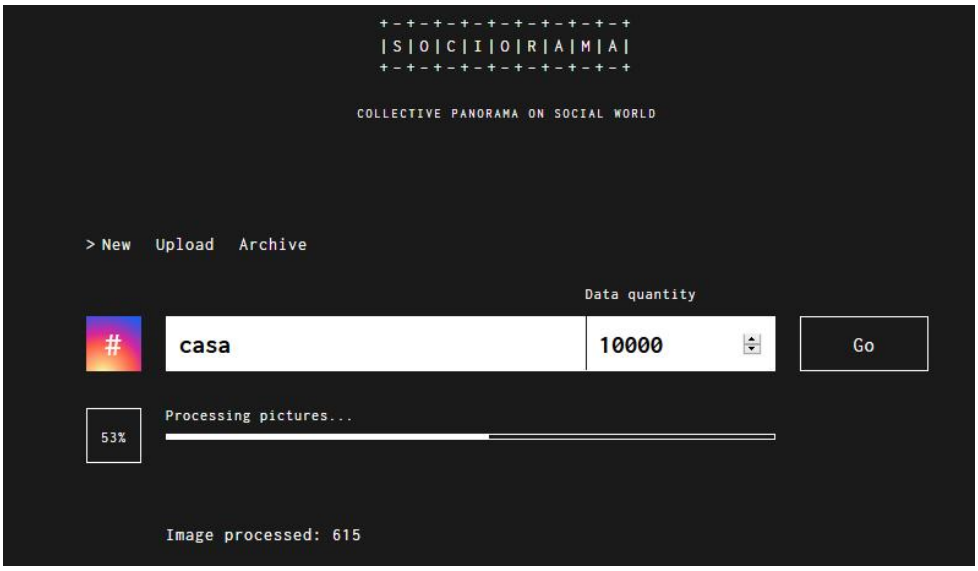

Figure 6-3 Web application *Sociorama*, developed specifically for this project, targets images with hastag #casa. Source: (Moriniello F., 2018)

The investigation is grounded in a post-photographic sensibility, one that aligns with the principles articulated by Joan Fontcuberta, where the artist's role increasingly converges with that of the curator, sociologist, and data ethnographer (Fontcuberta, 2016). In this context, the artwork is not solely the result of artistic intuition but a product of critical engagement with technological infrastructures and contemporary imagery that define the current visual economy.

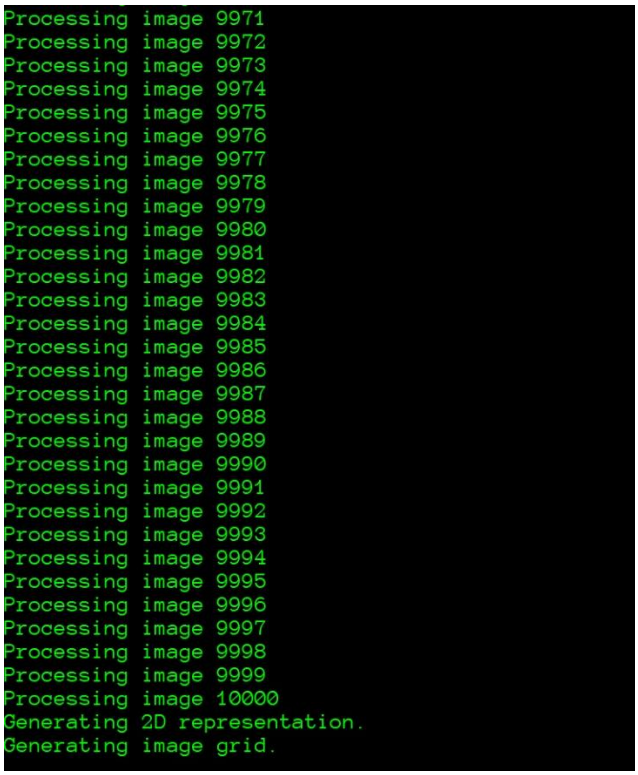

Figure 6-4 T-SNE clustering algorithms running. Source: (Moriniello F., 2018)

The methodology unfolded in two phases. In the first phase, a web application called *Sociorama* was developed to scrape publicly accessible content from Instagram. Attention was directed toward hashtags semantically associated with domestic life; *#home, #kitchen, #bathroom, and #bedroom* (in Italian *#casa, #cucina, #bagno,* and *#letto*), as shown in Figure 6-3. The volume of material was substantial: over 100,000 images were harvested, with the first 10,000 were selected per hashtag for further analysis and creation of the final artwork. It is important to underline that these images, though seemingly ordinary, constitute a form of voluntary cultural production that reflects not only personal aesthetics but also broader social patterns and aspirations. The use of hashtags by users is often governed not by semantic precision but by mechanisms of visibility and algorithmic optimization, thus transforming each image into a node in a larger network of digitally mediated self-representation.

Figure 6-5 Detail of the Artwork with a focus on a cluster. Source: (Moriniello F., 2018)

In the second phase, two machine learning techniques were applied to process and analyze the dataset: Google's Vision API for image content recognition (Google, 2022) and the t-distributed stochastic neighbor embedding (t-SNE) algorithm for data visualization (Hinton G. E., 2002). While these tools were employed in part for aesthetic and compositional purposes - organizing thousands of images into visually coherent thematic clusters - they simultaneously fulfilled a critical and speculative role. The formation of these clusters responded not only to the need for visual order but also to a deeper sociological inquiry, enabling an analysis of how shared visual languages emerge around specific themes. In this way, aesthetic and analytical interests converged, reinforcing one another in the exploration of contemporary image cultures. In 2018, the application of such tools in the context of artistic inquiry was still emergent. Their use in this project aimed to demonstrate what could already be achieved through creative engagement with AI at that moment in technological history. This was not merely an exercise in

computational novelty but a deliberate attempt to question how algorithmic systems interpret and organize user-created visual material.

Figure 6-6 Detail of the Artwork with a focus on a cluster. Source: (Moriniello F., 2018)

The very logic of AI training becomes visible through this artistic gesture. The project reflects on the fact that most AI systems - particularly those used for visual classification, recommendation, or social media analytics - are trained using massive quantities of user-generated content. Thus, the same public contributions that populate platforms like Instagram are repurposed behind the scenes to teach machines how to see, recognize, and interpret. In this sense, the artwork functions as a kind of counter-archive, revealing and recontextualizing the very processes by which AI comes to understand the visual world.

A close reading of the collected materials and the processes through which they were analyzed reveals several key insights into the visual culture of contemporary dwelling. What initially appears as ordinary or banal photographs - snapshots of kitchens, bathrooms, beds, and domestic interiors - acquire a new

critical resonance when aggregated at scale and subjected to algorithmic interpretation.

Figure 6-7 Artworks with clustered images. Source: (Moriniello F., 2018)

Firstly, the project foregrounds the visual representation of domestic space in the digital age. While individual images may seem trivial, their collective presence on a platform such as Instagram reveals the highly curated ways in which individuals perform their private environments. This performance collapses the traditional boundary between public and private, suggesting that domesticity itself has become a stage for digital self-representation. The home, once a private retreat, is reconfigured as a *broadcastable* space, shaped not only by lived experience but also by algorithmic visibility. Secondly, the use of artificial intelligence, specifically through Google Vision API and t-SNE clustering, introduces a distinct interpretative layer that complicates the relationship between viewer, image, and meaning. These algorithms, originally developed for categorization and recommendation systems, are here appropriated for both analytical and artistic purposes. This appropriation raises important questions about authorship, agency, and authenticity in a digitally mediated visual culture. Who interprets an image when machine learning models are doing the sorting and narrating? To what extent can such systems claim interpretative validity, and how does this reframe the role of the artist as both observer and director?

Finally, the broader socio-cultural implications of the project become apparent when considering the technological and behavioral infrastructures that underpin image production and circulation. Platforms like Instagram not only provide the means for visual expression but also act as socio-technical filters, shaping the norms, aesthetics, and rhythms of everyday life. The artwork demonstrates that digital platforms and AI technologies do not merely reflect cultural practices, they

actively co-produce them. In doing so, they contribute to the construction of social imaginaries, also with regard to domestic identity, routine, and value.

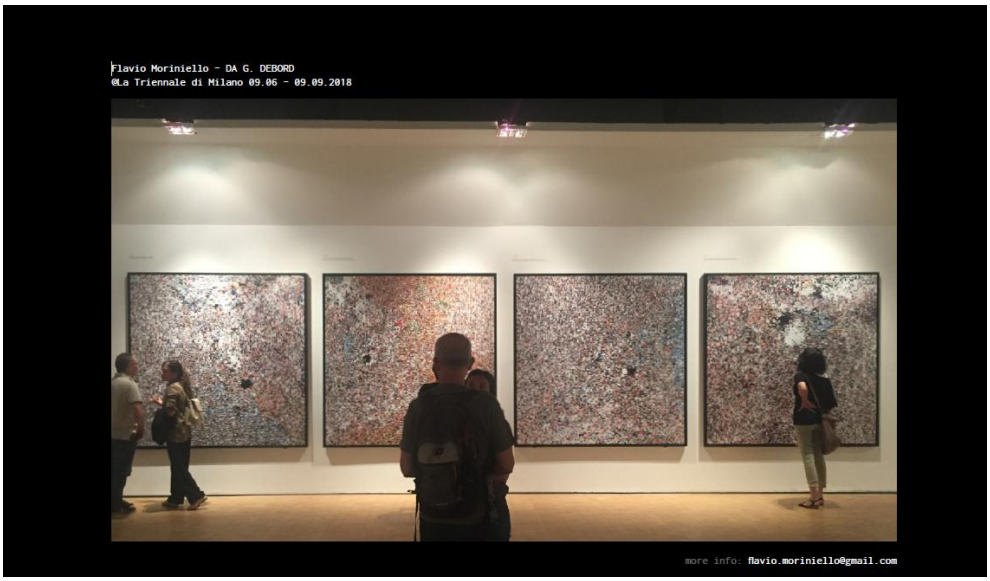

Figure 6-8 Landing page of Sociorama after the exhibition. Source: (Moriniello F., 2018)

These findings underscore the necessity of integrating AI and computational tools into contemporary artistic practice, not as instruments of automation, but as a new medium through which new cultural and epistemological terrains may be critically explored.

Figure 6-9 Installation view at Triennale in Milan. Source: (Moriniello F., 2018)

6.2. Projects and Artworks

In the subsequent section, the projects and corresponding artworks produced throughout the doctoral research period will be systematically examined. These works were developed collaboratively within an artistic duo composed of Lorenzo Bacci and Flavio Moriniello, the author of this thesis. For each project, an initial presentation of essential information will be provided, including the development timeframe, the title, and the exhibitions in which the work was displayed. This will be followed by a critical discussion of the research context and the principal cultural references that characterized each project. Finally, an analysis of the conclusions derived from each project will be presented, placing the findings within the broader framework of the research.

6.2.1. Exploring Image Recognition and Media as Extensions of Humans: *The Revolution will not be going Live* Project

This section presents the first project developed during the doctoral research period, titled *The Revolution Will Not Be Going Live* (Bacci & Moriniello, The Revolution Will Not Be Going Live, 2022). The work critically engages with image recognition technologies and, more broadly, with the pervasive presence of smartphones as extensions of the human body and mind. It also draws attention to the smartphone as the primary device through which users voluntarily generate and donate vast amounts of visual data. This data not only fuels the training of image recognition systems but also highlights the functioning of contemporary generative AI models. While the interaction with artificial intelligence is both technical and conceptual, the smartphone is approached primarily as a cultural symbol, interrogated through visual language, algorithmic processes, and anthropological reflection.

Developed between September and December 2022, the project emerged from an artistic residency at *Fotonica Diary* in Rome, undertaken in collaboration with Lorenzo Bacci as part of an ongoing artistic duo. Curated by Priscilla Pallante and Luca Brunetti, the residency culminated in the production of two primary outcomes: a large-scale printed artwork (2 meters × 1 meter) on blueback paper accompanied by a looping screen-based installation, and a publication designed by Priscilla Pallante and published by *Fotonica*.

The Revolution Will Not Be Going Live was subsequently exhibited at *Les Journées de la Photo 2023*, hosted by the *Maison de l'Europe* and the *Centre Claude Cahun pour la Photographie Contemporaine* in Nantes. The project was presented in both its physical and editorial formats, allowing audiences to engage with its layered research across different media.

The project interrogates the contemporary conditions of pervasive image production, algorithmic visibility, and the role of the human body, particularly the hand, within increasingly automated and surveilled media ecologies. Its conceptual skeleton is grounded in a pattern of cultural references, theoretical frameworks, and critical perspectives, which condition both its aesthetic language and methodological design.

At the heart of the work lies its title, a deliberate rephrasing of Gil Scott-Heron's 1971 poem and song *The Revolution Will Not Be Televised*. In the present project, the word *televised* is substituted with *going live*, a phrase drawn from the vernacular of Instagram and social media culture, where it refers to the act of broadcasting oneself in real time. This linguistic shift translates Scott-Heron's critique of mediated revolution into the contemporary situation, where visibility is equated with presence, and presence with performance. The reference also resonates with Andy Warhol's much-cited reflection on *15 minutes of fame*, extending its critique to a culture that now demands not occasional visibility but continuous self-broadcasting, self-optimization, and public relevance.

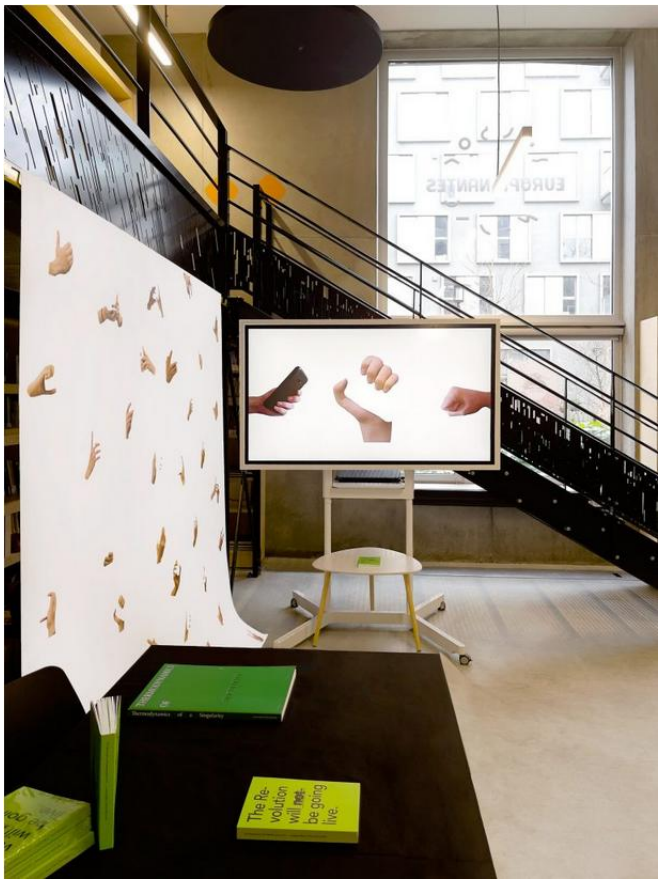

Figure 6-10 Installation view at Centre Claude Cahun pour la Photographie Contemporaine. Source: (Bacci & Moriniello, 2022).

The project thus sets out to explore the interconnected relationships between human bodies, digital technologies, and contemporary image cultures, through a series of interrelated aims:

- To investigate the interpretative logic of image recognition software, revealing its implications for visual knowledge production.
- To reflect on the saturation of visual mediation in contemporary life, through the critical perspective of Debord's *society of the spectacle* (Debord, 1967),
- To analyze the smartphone as both a physical and cognitive extension of the human body, following McLuhan's theory of media (McLuhan, 1994).
- To engage with the concept of self-surveillance in the context of platform capitalism, where users voluntarily expose themselves to visibility, functioning simultaneously as subjects and agents of surveillance (Foucault, 2019) (Finn, 2018).
- To reassert the symbolic and functional centrality of the hand, conceived as the first tool of the human species and a primary vehicle for gesture, communication, and creation.
- To position gesture as a site of cultural meaning and resistance, informed by anthropological studies and semiotic approaches to non-verbal communication.
- To repurpose image recognition technologies, typically used in surveillance systems, for critical and speculative artistic purposes.

The theoretical foundation of the work draws from an array of disciplinary perspectives. McLuhan's insights into the mediatization of the body project attention to smartphones as prosthetic devices. Foucault's writings on power and disciplinary mechanisms underpin the work's examination of self-surveillance, while post-photographic theory and visual culture studies frame the artwork's engagement with contemporary forms of image circulation, and visual saturation. Anthropological literature on gestures and non-verbal communication, such as Bruno Munari's *Supplemento al dizionario italiano* (Munari, 2000) and Joe Navarro's *The Dictionary of Body Language* (Navarro, 2018), offers a framework for understanding the semiotics of the hand. Historical references to Vito Acconci's *Passes* (Acconci, 1971) further situate the work within an art historical context.

Figure 6-11 Cover of Bruno Munari's Book Supplement to the Italian dictionary. (Munari, 2000)

From a technological perspective, the project probes image recognition systems, focusing on how these algorithms are trained to classify, and eventually exclude visual information. Though seemingly neutral, these systems encode specific aesthetic and ideological preferences that shape what is rendered visible or invisible. The artwork questions the epistemological and aesthetic consequences of delegating perceptual authority to machine vision, while also appropriating such systems to reframe their function through a critical artistic lens.

In terms of social critique, the project addresses the normalization of self-monitoring practices through mobile interfaces and networked platforms. It examines how the smartphone acts not merely as a tool of communication, but as a

behavioral prosthesis that structures attention, posture, and interaction. Drawing on Foucault's concept of *panopticon* and Finn's notion of *what algorithms want*, the work reveals the mechanisms through which users are incentivized to perform visibility, not only for personal expression, but also as part of a larger economy of data extraction, engagement metrics, and algorithmic optimization.

Philosophically, the project reconsiders representation and visibility in a time when digital imagery is not only pervasive but also enforced. Returning to Debord's *society of the spectacle*, it contends that image production is no longer just about representation but is itself an economic and disciplinary activity. By isolating gestures, filtering bodies through machine learning, and looping digital traces of the hand, the artwork stages a rupture in this seamless visual economy; a moment of critical friction that asks viewers to reflect on their own relation to visibility, control, and self-performance.

Anthropologically, the project places renewed emphasis on the hand, as both a symbol of human specificity and a practical tool of cognition and expression. In a cultural moment defined by touchscreens, swipes, and handheld devices, the hand becomes a site of connection between the organic and the digital. Its gestures, once spontaneous and communicative, are now indexed, replicated, and sometimes interpreted by AI systems.

Furthermore, *The Revolution Will Not Be Going Live* contributes to current discourses in art and research by proposing a multidisciplinary and critical engagement with vision and technology. It stages a dialogue between human specificity and technological generalization, between gesture and computational categorization, and in doing so, positions itself as both a critique of existing social practices and technological frameworks.

The development of the project was shaped by a critically engaged and iterative workflow, rooted in both conceptual research and technical experimentation. The project began with a period of observation, during which

recurrent socio-technological behaviors were identified, in particular the habitual integration of smartphones into bodily gestures and everyday routines. This stage of thematic selection served to ground the work.

From these observations emerged a set of core conceptual concerns—gesture and surveillance, that would structure the artwork both theoretically and aesthetically strategies of the project.

These concerns were further articulated through the selection of key theoretical and cultural references.

The methods employed in this project were not chosen solely for their technical functionality, but for their ability to materialize the project's core research questions and theoretical commitments. A central representational strategy was the decision to foreground the human hand as the primary visual and conceptual theme. As the first tool of the human species and a fundamental means of communication, the hand became a site through which to explore the intersection of corporeality, symbolic meaning, and AI interpretation. The emphasis on hand gestures also allowed for a broader engagement with anthropological and semiotic understandings of non-verbal expression.

To explore how artificial vision perceives and classifies the human body, a custom image recognition system was developed and trained on a dataset composed of the artist's own hand, both holding and not holding a smartphone. This dataset was used to examine the capacity of machine learning algorithms to identify body parts and gestures. An automatic script was implemented to detect and isolate instances of hands within video frames, removing all other visual data. This filtering process not only clarified the aesthetic focus on the hands but served as a metaphor inclusion and exclusion.

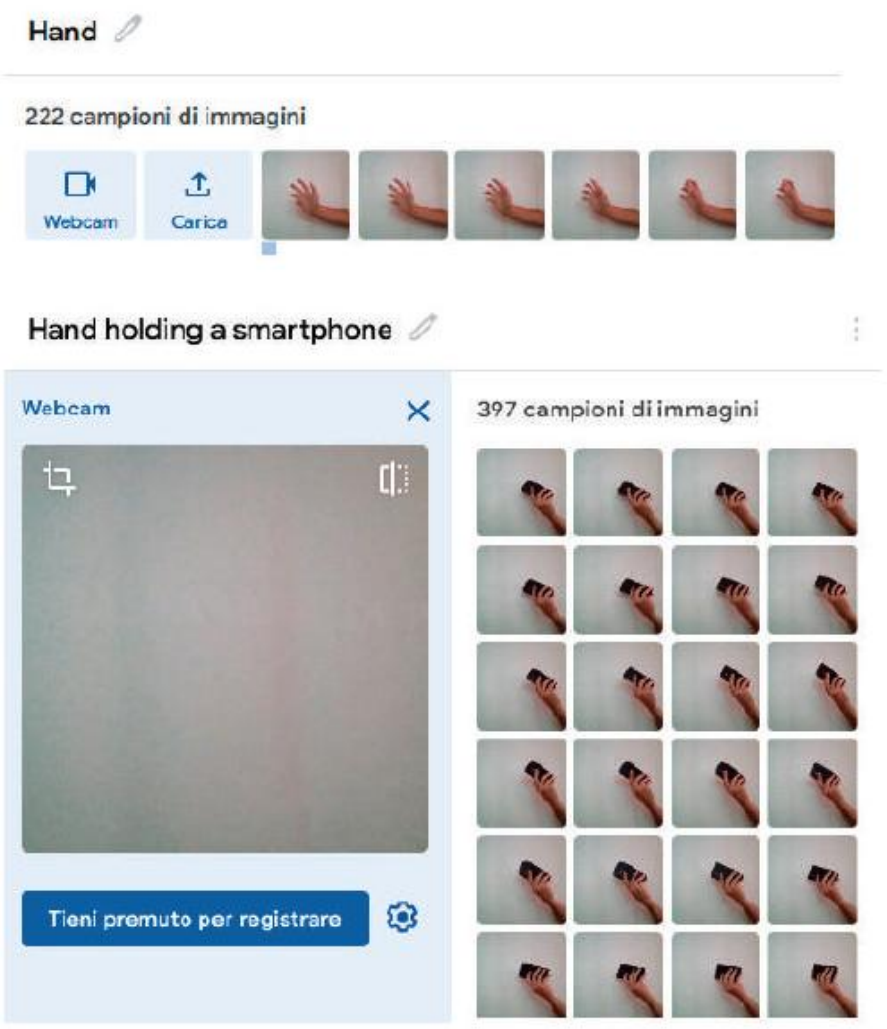

Figure 6-12 Training Image Recognition algorithm. Source: (Bacci & Moriniello, 2022).

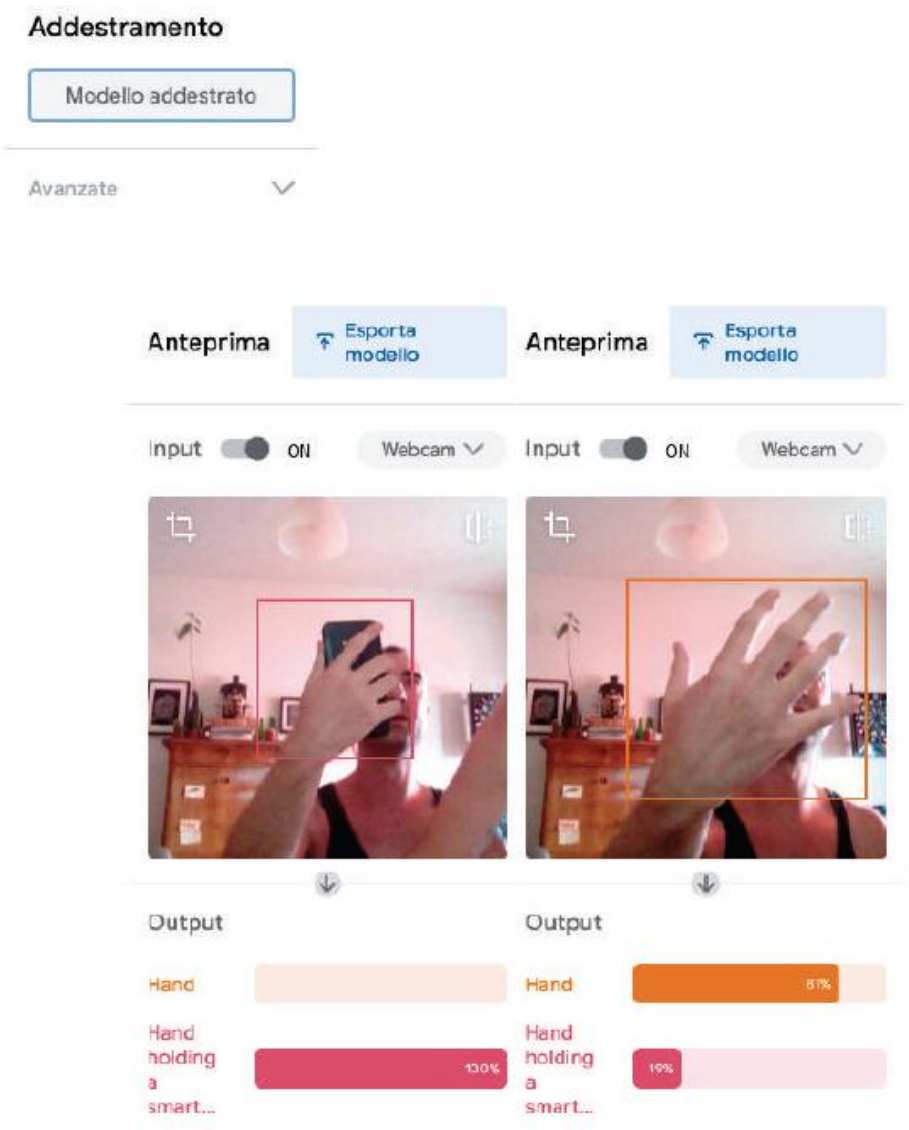

Figure 6-13 Testing Image recognition algorithm. (Bacci & Moriniello, 2022).

A key component of the installation was the use of real-world footage, specifically a video excerpt from the pitch invasion that occurred during the Milan–Sassuolo football match. This footage served a dual function: it illustrated the compulsion to record oneself even during illicit or transgressive acts, and it acted as a metaphor for the breakdown of mediated order. The sudden, collective trespass into a regulated space visually resonated with the project's critique of spectacle and performative visibility. More broadly, every methodological choice was calibrated to provoke friction between human and non-human modes of perception and to foreground the uneasy interdependence between embodied agency and machinic abstraction.

Figure 6-14 Image recognition algorithm on a screenshot of pitch invasion video. (Bacci & Moriniello, 2022)

Working with technologies commonly associated with surveillance and control necessitates careful ethical reflection. The use of the artist's own images for training ensured that issues of data consent and ownership were avoided, maintaining ethical integrity throughout the training and deployment of machine learning models.

Finally, the project opens a speculative dialogue on the boundaries between human and machine perception. It resists presenting technological tools as neutral or inevitable and instead treats them as culturally constructed mechanisms that can be repurposed, subverted, or resisted through artistic intervention.

6.2.2. Exploring Text-to-Image Generators as Fictional Narratives and Collective Memories: The *Brave New World* Project

This section examines the second project developed during the PhD period, which engages both technically and conceptually with text-to-image generation technologies.

Brave New World is a practice-based Art project by the artistic duo Flavio Moriniello and Lorenzo Bacci, developed during Moriniello's PhD research period (Bacci & Moriniello, 2023). The project was first exhibited as a month-long installation at *Edicola Radetzky* in Milan in 2023, as shown in Figure 6-15, and later featured in late 2024 at the *MEET Digital Culture Center* in Milan, as shown in Figure 6-16, as part of the group exhibition *Yoga AI*. The work's title *Brave New World* immediately evokes Aldous Huxley's 1932 dystopian novel, signaling the artists' intention to draw parallels between Huxley's fictional future and our contemporary, AI-driven cultural landscape. Over the course of the PhD period, *Brave New World* became a central case study exploring how artificial intelligence (AI) can be used in Contemporary Art to comment on society, memory, and authenticity.

At its core, *Brave New World* consists of AI-generated Polaroid-style photographs that collectively reconstruct an imaginary rave culture community. A subculture which, despite embodying the critical and controversial aspects characteristic of countercultural movements, is currently subjected in Italy to intense negative media scrutiny and the threat of legislative repression.

Moriniello and Bacci used generative AI to create hundreds of images that appear to document clandestine rave parties, capturing moments of gathering, dance, and freedom. These images were printed on actual instant films - similar to Polaroid - and presented collectively, creating the impression of a real photographic archive or reportage. The choice of the instant films format was deliberate: it carries a vintage looks that evoke authenticity and immediacy,

traditionally being *the instant, real, genuine image* associated with vernacular photography.

Figure 6-15 Installation view at Edicola Radetzky in Milan in June 2023. Source: (Bacci & Moriniello, 2023).

As it was explained, using such a trusted photographic medium *"impulsively prompts one to think of photos that were actually taken"*, thereby raising the bar of believability. In other words, by presenting AI-fabricated scenes in the guise of

instant snapshots, the artists set a trap for perception, inviting the audience to initially take the images at face value as honest documents.

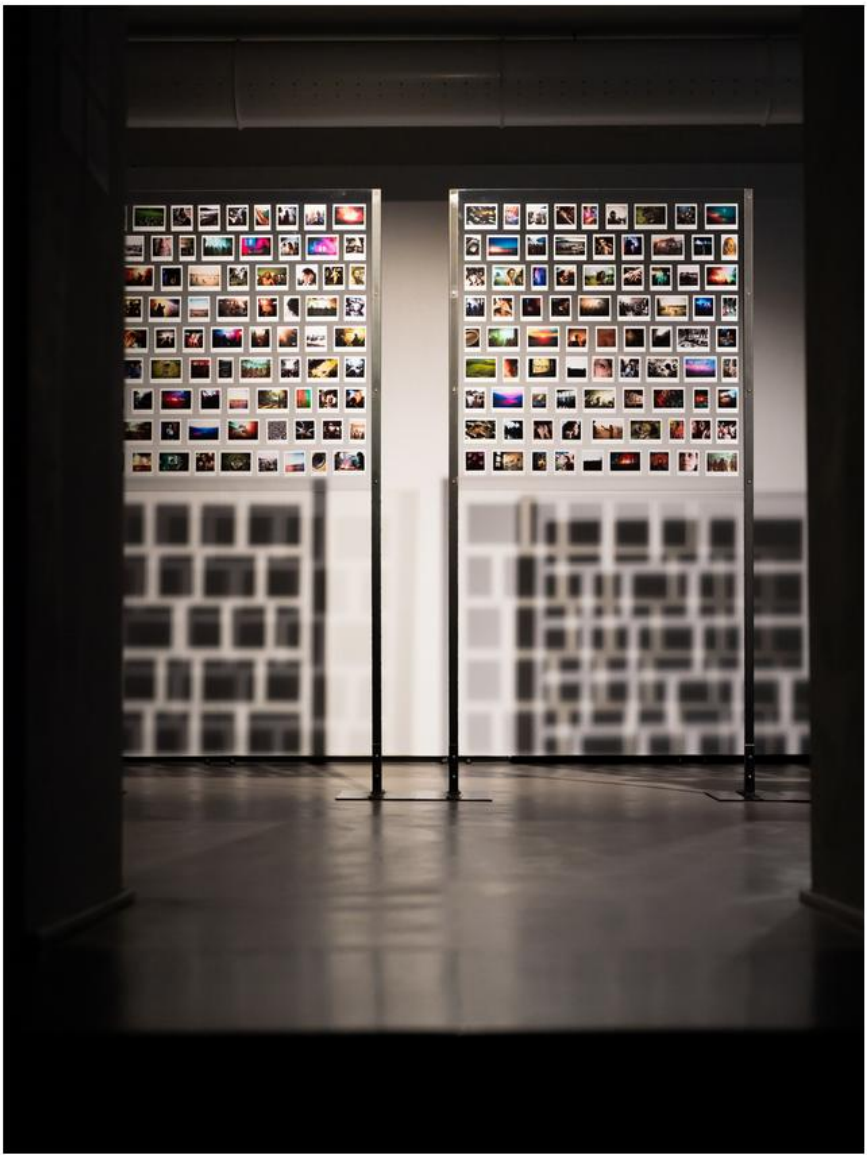

Figure 6-16 Installation view at MEET Digital Culture Center in Milan. Source: (Bacci & Moriniello, 2023).

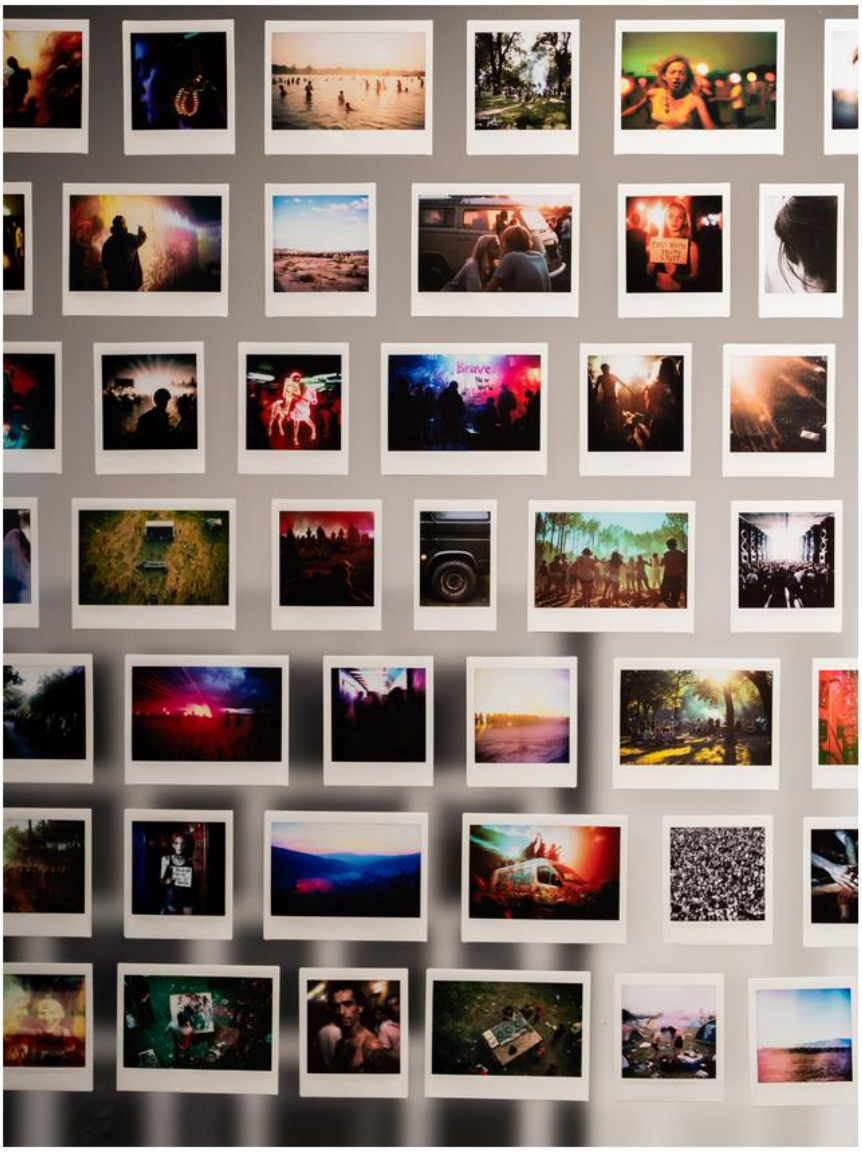

Figure 6-17 Detail of installation view at MEET Digital Culture Center in Milan. (Bacci & Moriniello, 2023).

Figure 6-18 Generated woman resembling character Marla Singer from *Fight Club*. *Source:* (Bacci & Moriniello, 2023).

The choice to focus on a rave community is closely tied to the context in Italy, where the so-called *Rave Decree*, a recent piece of legislation, was not only severely restricting unauthorized gatherings but, due to its broad and ambiguous wording, also posed a threat to any form of assembly, particularly those expressing political dissent. The images in *Brave New World* depict what look like euphoric, insolent party scenes, crowds dancing outdoors by lakes and mountains, tents and bonfires, moments of gathering bearing witness to a culture now criminalized. Crucially, the images have no dates or identifying captions. Viewers are left to imagine when and where these events took place. The installation at Edicola Radetzky, a small glass-

walled kiosk on the Navigli canal, reinforced this ambiguity by turning the space into a shared diary of the rave scene (Figure 6-15). Hundreds of photorealistic images were affixed to the kiosk's glass walls, viewable from the street by passersby, as if they were public evidence pinned up for scrutiny. The setting created a tension between the open visibility of the images, in a very public urban space, and the secretive, illegal nature of the gatherings depicted. This contrast was noted by critics: whereas classic rave culture thrives in isolated, hidden locations, here it was symbolically enclosed in a tiny urban kiosk, exposed to the city center. The exhibition space thus metaphorically freezes time and through this format, turning each snapshot into a memory fragment of a subculture fighting to exist.

Figure 6-19 Example of image. Source: (Bacci & Moriniello, 2023).

The citation of Huxley's *Brave New World* is more than a catchy title; it provides a conceptual guide for the project. Huxley's novel portrays a future society engineered for stability at the cost of individual freedom and truth (Huxley, 1932).

In a similar spirit, the project questions a present in which culture is increasingly mediated and controlled by technology and law. The project pointedly asks: What happens when a community's experiences and memories are suppressed? And can technology offer a way to preserve or simulate those memories? Just as Huxley's dystopia highlights suppressing conformity beneath the facade of a perfect society, this Art project highlights how AI can be used both as a tool of control and of subversion in today's society. The rave images are entirely fictitious, yet they could be true, a parallel reality that could exist, or that perhaps should exist, if not for authoritarian constraints. By creating a fictitious world as if it were the only way to experience, participate in, and understand the rave scene, the artists offer a provocative form of resistance: an imagined archive for a culture that is being actively erased in real life. In this sense, the AI-generated photographs become a form of counter-memory, a way to keep the spirit of the raves alive, albeit in a simulated form. *"It becomes a possible escape from imposed limitations, a survival space where a culture on the verge of extinction can regenerate itself,"* curator Tinterri writes of the project. Here the AI imagery is not mere fantasy; it is imbued with political urgency and hope, suggesting an act of cultural preservation through speculative means.

Figure 6-20 Example of image. Source: (Bacci & Moriniello, 2023).

In presenting these fake documentary images, *Brave New World* also tests contemporary viewer's discernment. At first glance, the images appear plausibly

real, some viewers indeed assumed they were seeing a genuine photographic reportage of raves. That said, deliberately imperfect images were introduced, most notably those reflecting the technological limitations of that period, particularly in the accurate rendering of hands. This strategy was intentionally employed to insert visual cues that signaled the synthetic origin of the images and to test the viewer's observational capacity in detecting such inconsistencies (Figure 6-21).

Figure 6-21 Imperfectly rendered imagery featuring a levitating cigarette and anatomically exaggerated hands illustrates the visual distortions commonly encountered in generative AI outputs. Source: (Bacci & Moriniello, 2023).

During the Edicola Radetzky exhibition, the public's reactions became part of the work's research data. Many passersby responded as if the images were authentic: several people came up claiming to recognize those places or to have participated in the events documented, demonstrating how credible the representation was. In other words, the audience began to incorporate those images into their own recollections, a striking false recognition effect. After the artists later revealed that all photos were AI-generated and no such events had actually occurred, some spectators were skeptical. A few even asked if the artists were lying about the AI origin, insinuating that the images *must* have been real photographs after all. This ironic twist – viewers suspecting that the *fake* images were too realistic to be fake - underscores the project's core exploration: the credibility of images in the age of AI. By exploiting the format's apparent authenticity, *Brave New World* effectively blurred the line between documentation and fabrication, forcing viewers to grapple with their assumptions about photographic truth.

Additionally, the project's ambiance drew inspiration from rave culture's electronic music. Not only were images generated, but it was also experimented with sound creating an AI-generated soundtrack for the work. This audio element extended the immersion and highlighted parallels between electronic music sampling and AI image generation. Just as DJs sample and remix existing sounds to create new music, the AI remixed visual data, from the dataset, to create new images. Both processes raise questions about authorship and creativity, themes deliberately wove into the project. By connecting the visual and the sound, the installation underscored a key point: contemporary culture and AI art both succeed on recombination and collective creativity rather than individuality. As the authors noted in an interview, in today's digital creative landscape it is *"completely useless to talk about creative individualism [or] genius"* attached to one author, since creation is increasingly a networked, collaborative, and technologically augmented process. The anthem to collectivity that rave music embodies is mirrored in the way generative AI draws from vast collective datasets. This insight situates *Brave New World* within the artists' broader practice and the PhD's thematic inquiry: it challenges traditional notions of authorship and originality in Art, asking whether creativity now lies as much in curation and manipulation of existing data as in the invention of new content.

In critically analyzing *Brave New World* within its research context, it is useful to frame the discussion through several key theoretical perspectives, alongside the

artists' reflections. Positioned at the intersection of photography, technology, and cultural memory, the project lends itself to multilayered theoretical reading.

Firstly, drawing on the concept of media as extensions of human faculties, it is productive to apply media tetrad (McLuhan, 1994) to understand the cultural role of text-to-image generators. According to this framework, every medium enhances certain functions, retrieves older practices, renders some previous technologies obsolete, and, when pushed to its limits, reverses into its opposite.

Text-to-image generation technology notably enhances the speed and accessibility of visual creation. It empowers users, even those without traditional artistic skills, to produce complex and realistic images almost instantaneously, thereby expanding creative capabilities beyond the professional sphere. At the same time, this technology retrieves historical forms of image production linked to imaginative visualization, such as early illustrated magazines, where visuals were crafted from textual descriptions rather than from direct observation. In doing so, it revives a model of storytelling and image-making that is grounded in the translation of language into vision.

Conversely, text-to-image generators tend to render obsolete certain traditional modes of artistic production, particularly those requiring prolonged manual execution and technical mastery, such as painting or classical photography. The emphasis shifts from the artisanal act of making to the conceptual act of prompting and curating. Finally, when overextended, this technology may reverse into a state of creative homogenization: by relying on similar training data and shared prompts, the outputs risk becoming repetitive, rigid, and lacking in novelty. Instead of opening endless creative possibilities, text-to-image generation may, paradoxically, standardize aesthetic expressions and constrain individual imagination. *Brave New World* can be understood as an expansion of photographic practices into the algorithmic domain. This shift challenges traditional definitions of photography as a truthful trace of the real, while simultaneously asserting that new media often reshape older forms rather than replacing them.

Through the lens of the media tetrad, then, text-to-image generators emerge as a potent, democratizing tool, but one whose cultural effects must be critically examined in terms of both their empowering potential and their latent risks.

In the context of *Brave New World*, one might ask: What does the *AI algorithm want* (Finn, 2018) in generating these rave images*?* Of course, the AI doesn't have wants in the human sense, but it does have an embedded goal: to produce images that look realistic according to its training. In doing so, the algorithm reflects the data it was trained on, likely millions of photographs of people, gatherings and landscapes. Therefore, the AI's output is imbued with the biases and tropes of its training data, which is essentially a distillation of our visual culture up to the present). The familiarity of certain faces or scenes in the *Brave New World* Polaroids may indicate that the algorithm is regurgitating familiar visual patterns. It is noteworthy that several spectators identified a resemblance between a portrait of a woman (Figure 6-18) and the character Marla Singer from *Fight Club* (Fincher, 1999). One possible explanation is that images from the film may have been included in the AI's training dataset, leading to the generation of an archetypal raver face those resonances with the features of a well-known character. It may be worth considering how algorithms encode cultural memory and expectations: those images are drawn on what it has statistically learned a rave looks like. In doing so, it inadvertently feeds on and reinforces cultural memory, the algorithm may tend to produce images that align with popular imagination of raves. This resonates with the artists' observation that *algorithms shape the way we perceive the past and predict the future, and this influences our awareness of the present"*. Essentially, the media is also shaping how we remember and will remember raves by presenting a visual narrative that the audience finds believable and even familiar. This perspective highlights a paradox in *Brave New World*: the AI-generated images are novel, never before seen scenes, but also deeply entrenched in algorithmic conformity, generated from patterns of existing media). This raises critical questions about the role of algorithms in creative practice: Are they expanding our imaginative horizons, or narrowing them by always averaging out what they already know? The work probes this tension by demonstrating that while algorithms can produce convincing simulations, those simulations reflect collective input. In essence, artists must critically engage with what that means for the authenticity and diversity of creative outputs.

Another important idea to consider is that modern culture is largely created, disseminated, and consumed through software tools, ranging from Photoshop to social media algorithms (Manovich L. , 2013). *Brave New World* engages directly with these principles of new media, displaying key traits. These traits are variability, each AI-generated image represents one variation among countless possible outputs, modularity, images are assembled from modular components of learned

features, and automation, the process of image creation is conducted autonomously through code. All these characteristics are identified as fundamental to contemporary media creation. The project thus serves as a critical demonstration of how artistic production itself can be used to interrogate the cultural impact of software. The generative AI model employed is a form of cultural software that encodes specific values and aesthetic biases. By appropriating this technology to create art, the artists critically examine the influence of software on visual outputs.

Brave New World thus invites a broader reflection on the need for media literacy in the software age. It encourages viewers to approach images critically, understanding that behind any picture there may lie algorithmic processes, aesthetic biases, or deliberate manipulations. In an era where manipulation is so easy, the project highlights the necessity of what might be called *software literacy*, an awareness of the tools and systems that mediate visual culture.

Finally, Manovich's observation that new media often hybridize older forms is clearly visible in *Brave New World*: the project fuses the analog instant photography with the algorithmic aesthetics of AI-generated digital content. This hybridity exemplifies how contemporary artistic practices recombine media traditions to generate new cultural meanings, with software serving as the platform that enables and shapes this integration.

6.2.3. Exploring Conversational Bot in 3D Virtual Environments: The *I Know, we should have talked about it before* Project

This section presents the third project developed during the doctoral research period, titled *I Know, We Should Have Talked About It Before* (Bacci & Moriniello, 2024). The work critically engages with emerging forms of human–machine interaction, particularly focusing on how artificial intelligence and immersive technologies could mediate experiences. Developed between 2023 and 2024 by the artistic duo Bacci | Moriniello (Lorenzo Bacci and Flavio Moriniello), the project explores the affective potential of AI-powered systems when embedded within participatory and performative environments.

The work was developed within the visual arts program *Flussi di incoscienza. Ai confini tra algoritmi e psiche*, presented under the thematic section *Psiche* at *FestivalFilosofia* 2024, a major event dedicated to philosophical and cultural dissemination. Supported also by the Smart Life Festival, the project was curated by Cristina Lanzafame, Federica Benedetti, and Chiara Spaggiari. It consists of an immersive virtual reality installation, an AI-powered conversational agent, a chatbot, and a live participatory performance. The format involves one viewer per session engaging directly with the VR environment and chatbot, while a public audience observes the interaction in real time, producing a layered experience of private dialogue and shared witnessing. These features contextualized the work at the intersection of contemporary art, philosophy, and digital culture.

The work was first exhibited at *FestivalFilosofia 2024* in the subterranean architecture of the Ex-Albergo Diurno in Modena and subsequently included in the *Smart Life Festival 2024* programme. Through this hybrid format, *I Know, We Should Have Talked About It Before* offers a speculative and emotionally charged space in which humans meet algorithmic environments and logic.

This project sits within this broader ongoing research into the complex relationship between humans and technology, particularly how emerging digital technologies transform perception and communication. The practice embraced a multidisciplinary, *post-photographic* approach wherein the traditional idea of an image as a mere representation of reality is abandoned in favor of exploring hybrid, constructed realities shaped by new socio-technological contexts. *I Know, we should have talked about it before* specifically aims to probe the nature of dialogue in an age of AI and extended reality, continuing the research into how technology could mediate interpersonal connections and personal introspection.

The work was conceptually rich, drawing on philosophical, media-theoretical, and cultural references. A key inspiration is Plato's Allegory of the Cave, which examines how perceptions of reality can be mere shadows of the truth. By creating a modern cave through VR, the artists invite viewers to question what is real versus illusory in our era of AI and virtual worlds. This philosophical framework is further reinforced by the physical setting of the installation's debut: the subterranean Ex-Albergo Diurno in Modena. The underground location, with its enveloping darkness and architectural detachment from everyday space, evokes the spatial dynamics of Plato's cave in a literal sense.

Figure 6-22 Installation view at Ex-Albergo Diurno in Modena in September 2024. (Bacci & Moriniello, 2024).

This dual enclosure, physical and virtual, heightens the viewer's disorientation, inviting deeper reflection on the constructed nature of knowledge, emotion, and presence in technologically saturated environments. The title itself, *I know, we should have talked about it before*, evokes a sense of unspoken conversations and unresolved issues, suggesting a Socratic or psychoanalytic impulse to bring hidden truths into dialogue.

Figure 6-23 Digital environment of the performance. (Bacci & Moriniello, 2024).

Figure 6-24 Digital environment of the performance and the AI avatar. (Bacci & Moriniello, 2024).

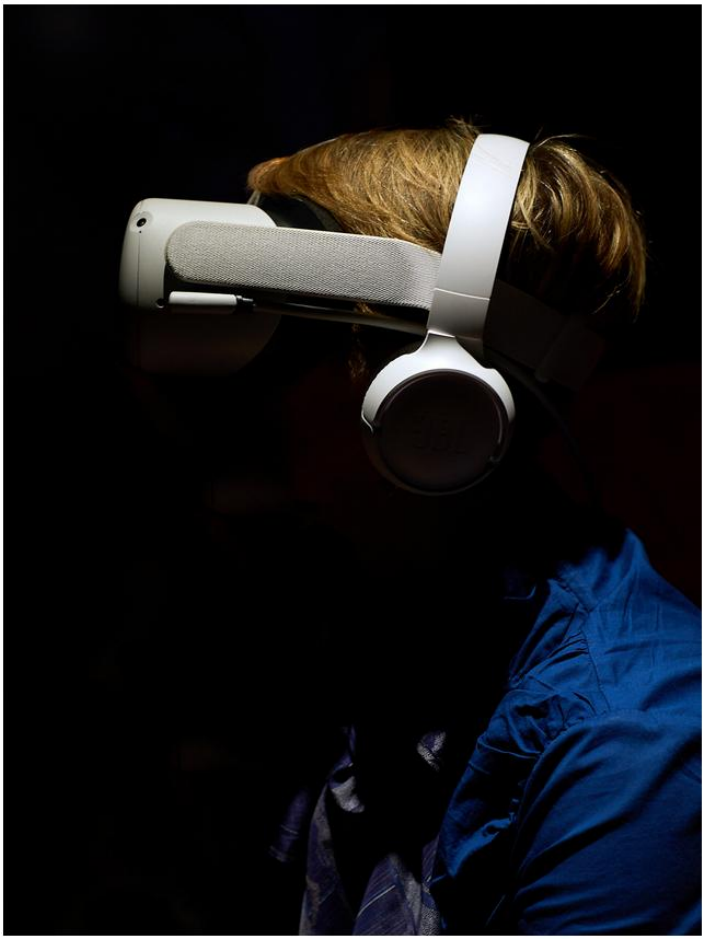

Figure 6-25 Detail of installation and performance at Ex-Albergo Diurno. (Bacci & Moriniello, 2024).

The development of the project followed an iterative process that was built upon a prior experimental prototype. In 2023, the artists created an AI-powered virtual museum guide resembling Frida Kahlo, designed to accompany viewers through her life and artistic legacy. This initial prototype was presented during the Open Lab Day at the Instituto de Diseño y Fabricación (IDF), served as a proof of concept for integrating LLMs with animated avatars in real-time interactive environments.

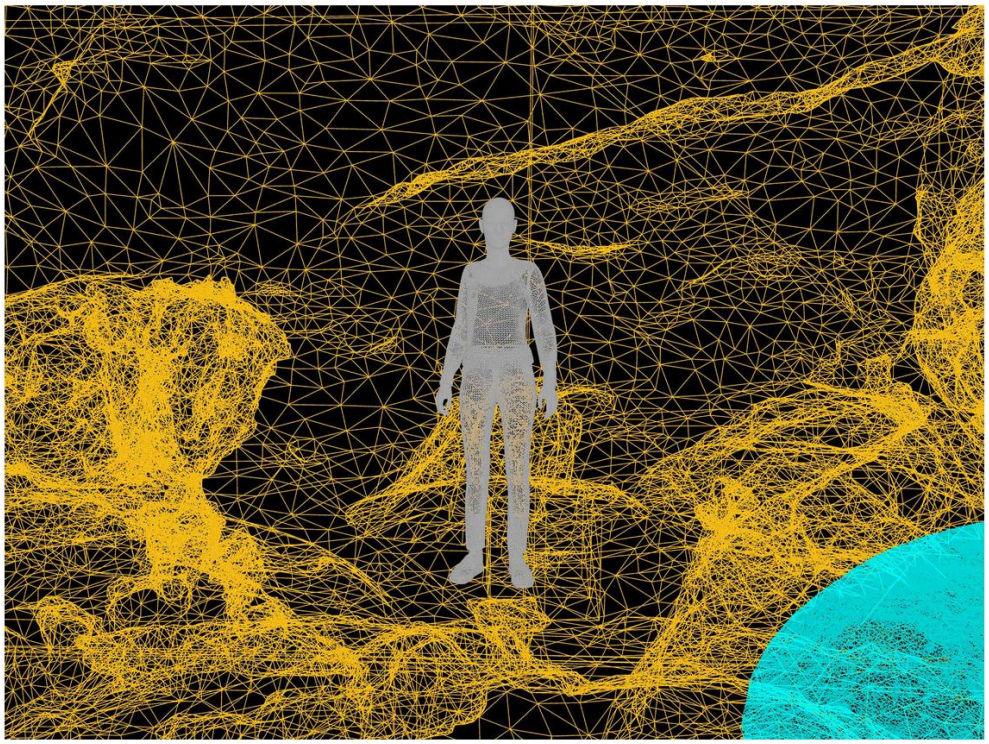

Figure 6-26 Mesh representation of a 3D digital environment with an AI-powered avatar, highlighting the interplay between spatial modelling and algorithmically rendering. (Bacci & Moriniello, 2024).

The final version of the project was constructed using Unreal Engine 5.3, enabling the design of a responsive and immersive virtual space. The avatar, developed through Metahuman, was connected to an LLM-based chatbot capable of generating dynamic dialogue in response to the user's speech. The avatar was further animated using a synthetic voice engine, enhancing the illusion of human-like presence. While technically autonomous in generating text, the avatar operated within a improvisational and flexible conversational structure designed to steer the interaction toward key philosophical themes. These included fundamental questions relating to existence, the impact of the AI revolution, emotional interiority, and shared human fears and anxieties. This scripted-yet-open framework

allowed the AI to function both as a guide and a mirror, prompting users to reflect on their own beliefs while navigating a synthetic conversational encounter.

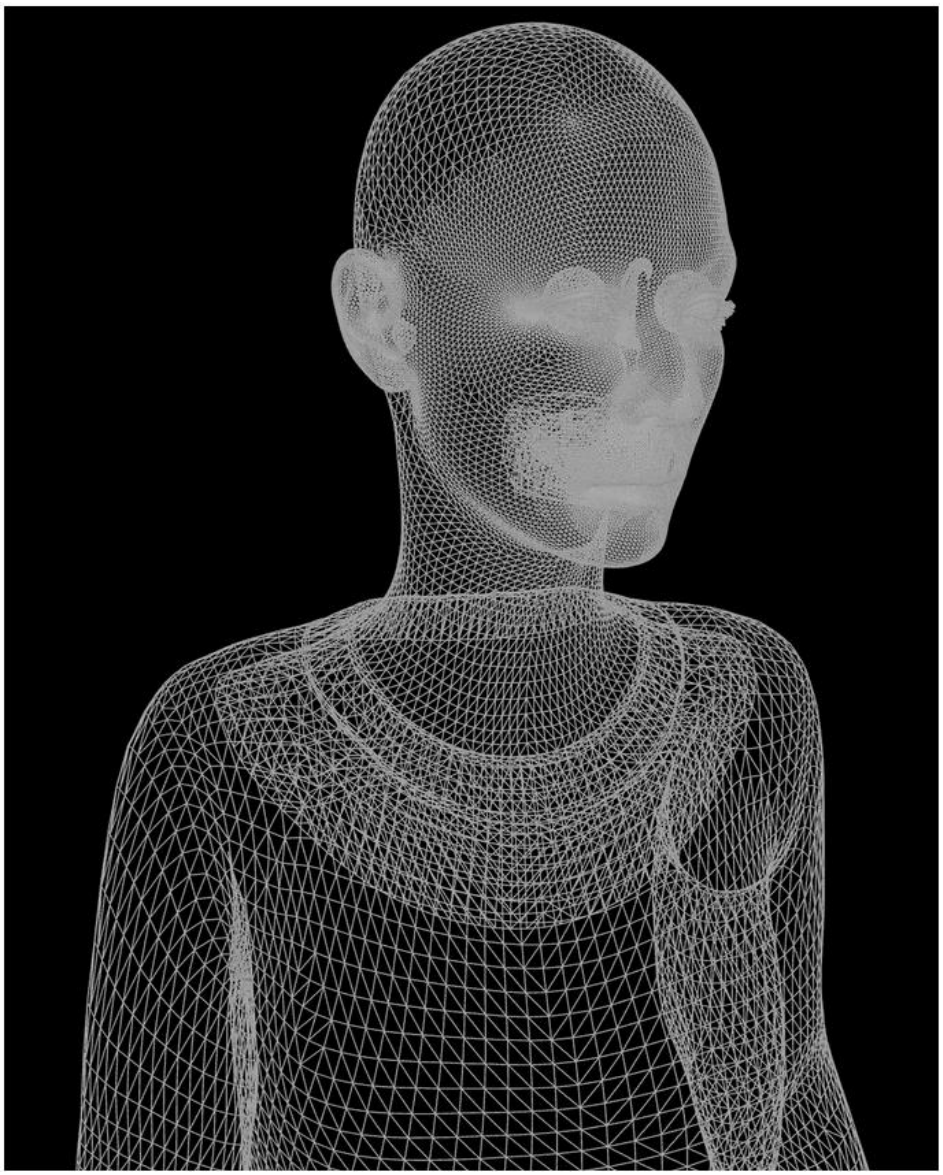

Figure 6-27 Mesh representation of a 3D AI-powered avatar. (Bacci & Moriniello, 2024).

An essential element of the project's dramaturgy lies in the presence of the audience. Those who observe the interaction from the outside without access to the virtual environment or the AI's responses. Positioned as silent witnesses, these spectators are excluded from the conversational content yet deeply implicated in the unfolding experience. They do not see what the participant sees, nor hear what the AI says; instead, they are confronted solely with the participant's gestures, pauses, reactions, and spoken fragments. This asymmetry produces a layered spectatorship, one that echoes the structure of contemporary digital voyeurism, where individuals often view others' emotional performances without full contextual understanding. The viewer thus becomes a kind of interpretive subject, tasked with reconstructing the invisible dialogue through the participant's bodily cues and verbal responses. In doing so, the project foregrounds questions of opacity, mediated presence, and partial knowledge, amplifying the tension between interior and exterior experience. It also stages a subtle critique of surveillance culture, where observation often occurs without comprehension, and presence without participation.

Figure 6-28 Photorealistic representation of a 3D AI-powered avatar. (Bacci & Moriniello, 2024).

The conceptual foundations of the project are situated at the intersection of media theory, affect studies, posthumanism, and contemporary debates on immersive technologies and digital intimacy. Rather than interpreting the VR-AI

installation solely through the lens of classical media theory, the project resonates with more recent cultural critiques that explore the psychological, relational, and political implications of human–machine interactions.

The Artwork can be understood as a contemporary manifestation of McLuhan's notion of media as extensions of human beings (McLuhan, 1994). In this case, extending sensory perception and emotional experience into a virtual, AI-mediated domain. The VR headset amplifies vision and presence, while the AI avatar simulates conversation and introspection, creating a technologically mediated space where the boundaries of the self are reconfigured. Viewed through the lens of Bruno Latour's Actor-Network Theory (Latour, Reassembling the social: An introduction to actor-network-theory, 2007), the installation becomes a dynamic network of human and non-human actants: the artist as designer and coder of experience, the user as embodied participant, the AI as algorithmic interlocutor, and the spectators as peripheral yet affected observers. Each component contributes to an agency, shaping the event as a collective, distributed performance of thought, sensation, and mediated encounter.

Notably, the work draws on Sherry Turkle's reflections in Alone Together, which interrogate how digital technologies simulate empathy while transforming the nature of conversation and presence (Turkle, 2012). In Turkle's view, machines that *understand* us risk substituting relational complexity with programmed affective responses. The AI interlocutor in this project, encountered one-on-one in a virtual environment, brings this idea into life: it mimics conversation, yet its capacity for listening is bounded by code. The emotional ambiguity of the exchange, real for the participant, synthetic in construction, embodies the tension Turkle identifies between connection and disconnection in technologically mediated relationships.

In terms of visual culture and image theory, the project extends Hito Steyerl's critique of post-representational media. In works such as *The Wretched of the Screen*, Steyerl describes how digital images no longer serve as windows onto reality but function as vectors which carriers of influence, performance, and economic value (Steyerl, 2012). Aspect enters in the artwork through the treatment of the VR environment not as a representational space, but as a constructed one: a stage for performative subjectivity. Within this frame, the AI avatar is not a neutral tool but a scriptwriter of affective experience, actively shaping what is said, heard, and felt in ways that reflect the broader cultural logic.

Furthermore, the performative structure of the installation drawn inspiration from performance theory (Fischer-Lichte, 2008). The one-to-one format produces a liminal space of encounter in which the participant's role fluctuates between actor and audience, presence and projection. The surrounding spectators, excluded from the dialogue yet implicated in its unfolding, are rendered into voyeurs of affect, mirroring contemporary conditions of public intimacy on social media, where emotional expression is both performative and fragmented.

The project is permeated by an anthropological understanding of human behavior and gestures in the face of new tech. With this work it is suggested that at a fundamental level, humans remain not so different from prehistoric ancestors, even while surrounded by radically advanced technology. Our cognitive and emotional responses such as curiosity, anxiety, and the need for connection, are deeply rooted. The use of a humanoid AI avatar and immersive cave-like VR echoes ancient patterns of storytelling and ritual, placing the work at an intersection of the primal and the futuristic. Indeed, the piece was partly inspired by robotics research on human-like machines: the artists cite Hiroshi Ishiguro's 2005 Expo experiment with the android Repliee Q2, in which visitors felt uncanny disappointment when a robot almost resemble humans (Kanda, 2004). This also invokes Masahiro Mori's theory of the *Uncanny Valley*, describing the eerie tension when a non-human entity looks or acts nearly human but not perfectly so. These references also indicate the project's engagement with psychological and anthropological questions of human–machine empathy: How do we react to *almost human* virtual beings? What primal discomfort or fascination is triggered? By framing the VR interaction as an intimate *conversation* with an AI, the artwork explores these questions, examining the age-old human gesture of communication (speech, eye contact, emotional exchange) transplanted into a synthetic realm. The very format, a one-on-one dialogue, has an anthropological resonance of oral tradition and confessional exchange, now complicated by the presence of an artificial partner.

In sum, *I Know, we should have talked about it before* operates within a rich conceptual framework to explore how immersive media reconfigure notions of communication, intimacy, and spectatorship. By integrating AI, VR, and live performance, the project not only questions the affective limits of machine intelligence but also stages a critical inquiry into the socio-technological structures that shape contemporary experience. It dialogues with media theory, critiques of technological society, and post-photographic/visual culture theory, while also referencing philosophy and human sciences. Through these views, the project

addresses pressing social and philosophical issues: the blur between reality and representation, the mediation of personal relationships by technology, the emotional gaps in an age of digital communication, and the critical awareness needed to navigate these new *shadows* of reality.

6.3. Recommendations for Creative Professionals

This final section outlines a series of recommendations that emerge from direct experience working as an artist and researcher with and concerning AI. The observations presented here are grounded in practice-based engagement and guided by continuous experimentation with artificial intelligence as both a tool and a medium. They aim to support creative professionals in adapting to a paradigmatic transformation in the production of visual culture.

The first and most urgent recommendation is to fully acknowledge the paradigm shift currently underway in creative work. The traditional model, grounded in physical production, has been displaced by a postproduction and curatorial paradigm. In this new model, the essence of creative labor lies not in making, but in selecting, curating, prompting, and refining. The value of creation has shifted decisively from manual execution to postproduction. This is particularly evident in fields such as photography, filmmaking, and illustration, where the capture of raw content is increasingly replaced by synthetic generation. The task now involves controlling generative systems, evaluating outputs, and intervening strategically to shape the final result. The role of the editor becomes central, not as a supporting function, but as the core site of authorship.

As technical tasks are increasingly delegated to machines, what remains irreplaceable is the ability to conceptualize and recognize. The capacity to articulate a clear vision, translate it into effective decisions, and discern the qualities of generative outputs has become the foundation of contemporary creative competence. Accordingly, training should prioritize the development of analytical, curatorial, and interpretive skills over manual techniques.

There is, therefore, a need to adopt a new workflow logic. The creative process has become increasingly iterative and non-linear. A typical workflow now involves the following sequence:

- Articulating an objective or idea clearly;
- Translating the idea into a series of prompts;
- Generating a set of preliminary outputs using AI tools;
- Selecting and combining elements from these outputs;
- Refining the selected material through successive prompts or manual adjustments.

This cycle - generate, recombine, and refining - demands a hybrid approach that merges conceptual clarity with adaptive experimentation. The creative act becomes a form of guided emergence. This transformation calls for a reorientation of identity: creative professionals become directors of generative processes. This redefinition of creative roles aligns with the broader literature presented in Section 3.11 (e.g., Ibrahim, Yadav, Heigl), which discusses AI as a co-creative agent that necessitates new methodologies and forms of authorship.

Within this framework, it is also necessary to rethink the role of tools. The assumption that creative work depends on physical instruments such as cameras, lights, or sets must be reconsidered. In many domains, these tools have been effectively replaced by fully synthetic processes. As such, investment in traditional equipment may no longer be essential. Instead, emphasis should be placed on mastering generative systems and developing a semiotic understanding of their outputs.

The demand for non-specialized, execution-based roles is declining. However, this does not signal the disappearance of the creative professional. On the contrary, it reinforces the centrality of the creative figure, someone who possesses both aesthetic judgment and strategic direction. In many cases, entire productions can now be executed by a single individual operating from a domestic workspace. This condition offers unprecedented autonomy, but also demands greater responsibility, self-discipline, and conceptual rigor.

Artists are therefore advised to engage with artificial intelligence not merely as a tool but as a new medium in its own right. This entails a willingness to let go of established methods and to cultivate new forms of authorship. Clarity of purpose is essential; without a well-defined objective, generative processes risk becoming aimless or derivative. Artists must become experts not only in their vision and communicative strategies but also guiding machines toward meaningful outputs. This approach resonates with the literature explored in Section 3.11 (e.g., Andrews, Bender, Oksanen), which emphasizes the transformation of artistic workflows and the reorientation of creativity, labor, and aesthetics around generative systems.

Educational institutions must also rise to the challenges posed by synthetic media. First, it is essential to counterbalance sensationalism with critical engagement. Excessive fear or naive optimism are equally unproductive as discussed in section 3.12. Instead, education should foster a deep understanding of both the potential and limitations of these technologies. Second, there is a pressing need to increase literacy, not only in media but also in the grammar of AI systems and their sociotechnical implications. Third, ethics must become a foundational component of curricula. Issues of bias, representation, intellectual ownership, and environmental impact cannot be treated as peripheral concerns; they are integral to the responsible use of AI in cultural production.

Regarding this third point, synthetic media raises numerous ethical concerns. Of particular importance is the tendency of generative systems to replicate and amplify existing biases, including the risk of overrepresenting dominant identities while marginalizing others. Creative professionals have an obligation to remain vigilant, to question what is shown, what is excluded, and why. Moreover, while automation may lead to job loss in some areas, it also creates new forms of labor centered around supervision, interpretation, and critical design. These roles must be cultivated and valued. Such considerations are also echoed in the reviewed studies in Section 3.10, which call for intersectional, ethical, and human-centered AI frameworks.

In conclusion, the recommendations presented here reflect a transitional moment in creative culture, one defined not by obsolescence but by redefinition. Artists and creative professionals are not displaced by machines; they are repositioned. It is in recognizing this repositioning and actively shaping its contours that the future of creative work will be determined. Nevertheless, while artists may

gain unprecedented individual autonomy through AI, this should be tempered with caution against collective homogenization and the erosion of cultural diversity, as highlighted in the literature from section 3.9 to 3.12.

7
Conclusion

This doctoral research has critically investigated how artificial intelligence (AI) is reshaping creative fields - both culturally, perceptually, and practically - by combining media discourse analysis, empirical survey research with students, and practice-based artistic investigation. By triangulating data from three distinct yet interrelated domains, the thesis offers an interdisciplinary contribution to the evolving discourse on AI in art and design.

Chapter 4 of the thesis presents a computational analysis of 4,265 articles published in *Wired Magazine* between January 2018 and April 2023. This chapter examines how AI is narratively and emotionally framed within a leading news media outlet focused on emerging technologies. Using AFINN and VADER lexicon-based sentiment analysis, the study reveals that the overall tone of AI coverage is predominantly optimistic yet increasingly polarized over time. This indicates growing divisions in public discourse. Linear regression models show that both positive and negative sentiments intensify simultaneously, suggesting that as AI's societal relevance expands, so too does the emotional intensity which surrounds it. Over time, the tone has oscillated between great enthusiasm and catastrophism.

This highly polarized representation contributes to distorted public expectations and a perception of uncertainty and instability, often leading to fear and rejection.

The prevalence of enthusiastic narratives contributes to the broader phenomenon of AI hype, frequently overshadowing ecological, infrastructural, and ethical concerns associated with AI systems. This pattern aligns with established critiques in media theory regarding techno-optimism and the dynamics of hype cycles. The findings resonate with broader concerns that AI is frequently represented in idealized terms, which can suppress critical reflection and ethical studies.

These observations underscore the urgent need for both media and AI literacy, as well as more balanced and contextually grounded reporting, especially given the substantial role media narratives play in shaping public understanding and policy frameworks.

Chapter 5 provides a longitudinal snapshot of how AI is perceived by art and design university students, emerging practitioners who will directly shape the creative industries in coming decades. Over three years (2023–2025), 265 students from the Universitat Politècnica de València participated in a survey that explored their awareness, attitudes, ethical concerns, and conceptual frameworks surrounding generative AI. This survey is particularly significant, as it surfaces not only the cognitive and emotional responses of the participants but also helps assess whether educational institutions are adequately preparing students for the paradigm shifts already underway.

This longitudinal survey expands crucial perspective from the generation which fully defines future creative practices. The results reveal a complex and often ambivalent picture. Students generally express uncertainty and concern but they acknowledge AI's potential to enhance creativity, streamline processes, and improve accessibility, especially for individuals with disabilities Moreover, they also express concern about the dehumanization of creativity and the erosion of manual and conceptual artistic skills.

Notably, students show a growing awareness of the ethical tensions surrounding authorship, data provenance, and aesthetic homogenization. Participants often defaulted to viewing AI as a neutral tool or co-author. Responses

demonstrated great fragmentation in attribution patterns, a sign that may indicate an increase of critical literacy regarding the socio-technical constitution of generative AI systems.

In this context, the survey results are not just indicative but also guiding. These insights underscore the importance of updating educational curricula to foster critical AI literacy, ethical sensitivity, and creative agency in AI-augmented environments. They advocate for educational reforms that incorporate AI both as technical subject and as socio-cultural phenomenon that demands reflection, critique, and creative experimentation. They also affirm the thesis's core claim: that AI's impact on the creative industries is not just a matter of new tools, but of new values, epistemologies, and imaginaries.

Chapter 6 shifts from analytical observation to embodied engagement by presenting a series of art exhibitions and creative projects developed as part of this thesis's practice-based research. The artworks presented have two important aspects: they address artificial intelligence and simultaneously make use of AI tools. These works do not merely illustrate the conceptual themes explored in previous chapters. Indeed, they constitute a form of epistemological intervention and a critical experimental methodology. In this perspective, the artwork is not only the outcome but also the engine of inquiry, revealing relational and material tensions that might remain abstract in discursive analysis.

After presenting early experiments, the chapter analyzes three main projects developed during the research period. *Revolution Will Not Be Going Live* engages with image recognition tools to generate a collection of hands holding a smartphone. During the development of the work, the training mechanism was tested by providing a custom dataset created by the author, consisting of hands with and without smartphones. In this case, both the capacity of image recognition tools and their application were evaluated. Moreover, this project also addresses two important themes in this context: the origin of modern AI Renaissance, rooted in user-generated data from the internet over recent decades, and the bodily transformation induced by digital technologies.

In the next project, *Brave New World*, experiments were conducted with generative image algorithms, particularly text-to-image generators, focusing on their ability to produce photorealistic images. Additionally, the work explored the capacity of these tools to create fictional scenarios and narratives, and to engage

with the public in testing their credibility. In this context, a different workflow was experimented with compared to traditional content generation. The making of the artwork also confronts us with the biases embedded within these systems, exposing how generative models can replicate and reinforce existing social prejudices or replicate only a certain type of output.

After careful iconographic research and content planning, the process involved experimenting with prompts, generating various types of images, selecting, varying, and combining content. The *Brave New World* project illustrates a paradigmatic shift from manual production to postproduction and curatorial authorship, where prompting, selecting, and refining become the core of creative labor. Generative tools demand a hybrid workflow based on conceptual clarity and iterative experimentation. This redefinition elevates the artist to the role of director of generative systems, highlighting the need for AI literacy, ethical awareness, and critical engagement. Traditional tools give way to synthetic processes, calling for new skills and responsibilities. Ultimately, AI does not replace the artist but could reposition them at the center of a transformed creative ecosystem.

Finally, *I Know, We Should Have Talked About It Before* explores immersive virtual reality environments in which humans interact with avatars powered by large language models (LLMs). The evocative title suggests an urgency to address the ethical, cultural, and philosophical implications of these technologies. It implies that society is already behind in initiating such critical conversations. Through the use of dialogue-based interaction, the work probes the limits of machine-generated conversation and situates it within a contemporary reinterpretation of Plato's allegory of the cave. It invites reflection on the nature of mediated experience, suggesting that our interactions with reality are increasingly filtered through algorithmic systems that simulate presence, dialogue, and understanding.

The installation not only confronts the user with these technologies but also challenges the audience by placing them in observation of the user, a human subject actively engaging with an AI-driven avatar. This dynamic turns viewers into witnesses of an evolving human–machine relationship. By allowing participants to choose a narrative scaffold rather than follow a rigid script, the work foregrounds the performative and adaptive capacities of LLMs. This structure not only enhances the illusion of agency but also reveals the generative system's reliance on context

and framing to construct meaning. Ultimately, the piece provokes critical reflection in an era where machines can persuasively simulate human presence.

Across its three analytical axes - media discourse, user perception, and artistic production - this thesis articulates a model of artificial intelligence a cultural, epistemic, and aesthetic force. Rather than asking what AI can merely do, the research foregrounds how AI means: how it constructs narratives, co-authors artworks, reshapes labor, and reconfigures creative subjectivity.

Theoretically, the work is grounded in interdisciplinary framework, integrating perspectives from New Media Studies (McLuhan, Debray), Actor-Network Theory (Latour), Digital Humanities (Rogers, Manovich), and Posthumanism Theory Aesthetics (Zylinska, Finn). These paradigms enabled the project to move beyond instrumental accounts of AI and toward a critical examination of its various dimensions. The survey findings reinforce these theoretical frames, suggesting that emerging creatives do not only need technologically awareness but increasingly informed education. Their concerns, ranging from the erosion of authorship to the ambiguity of creative agency, map closely onto broader philosophical debates around autonomy, originality, and the future of work. The practice-based phase, in turn, enacted these theoretical tensions in material and experiential form, enabling the research to demonstrate, rather than merely arguing, the complex interconnections between humans and machines in the contemporary.

In conclusion, this thesis does not seek to define a singular truth about AI's role in creative industries, but rather to map the multiplicity of ways it is narrated, understood, and felt. In doing so, it lays the groundwork for a number of future outlooks. Future research should explore how AI narratives differ across cultural contexts. Curricular reform is urgently needed to integrate ethical and aesthetic AI literacy into creative education. Practice-based research must evolve through cross-disciplinary collaboration and participatory engagement. Critical inquiry into algorithmic bias and representation is essential to ensure cultural justice in generative systems. Finally, new effective and sensory methodologies are needed to understand how AI-generated experiences shape emotions, perception, and social imaginaries.

8
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