Editorial Notes: Smart and Sustainable urban logistic applications aided by Intelligent Techniques

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Abstract
CO2-free urban logistics is one of the 10 objectives to reach by 2030 as part of transport policy. What technologies can help to accomplish it? In this paper, we discuss the very complex situation that today's big and modern cities are facing with a tremendous environment of many urban logistics companies running in the same city. In the majority of cases, there is less or none coordination among them worsening traffic congestions. We believe that intelligent techniques are one of the key approaches that can aid to support smart and sustainable urban logistic applications. There are large open problems in the field of cooperative urban logistics that can greatly improve with the help of artificial intelligence. Some solutions are cited in this paper, but the overall conclusion is that there is still much work to be done.

Introduction
Modern worldwide cities are forced to tackle a wide range of urban traffic problems: first of all the big challenge of reducing traffic congestions, CO2, pollutant emissions, and energy consumption. Lately, a huge increase in urban logistic distribution in urban areas has worsened the overall situation of urban traffic. This last variable is added to the overall cities' efficiency objectives as a key requirement for urban logistic with respect to the economic and environmental factors. There is an extensive load on developing efficient distributive logistics. Last mile delivery (LMD) is one sector that is growing very fast, mainly due to online retail. LMD describes the movement of people and goods from a transportation hub to a final destination in the home. In 2018, the Global Last Mile Delivery market size was 30,200 million US Dollars and it is expected to reach 55,200 million US Dollars by the end of 2025, with a CAGR of 9.0% during 2019–2025 [1]. In the business-to-customer (B2C) e-commerce context, final delivery is one of the most complicated, expensive, and inefficient segments along the whole logistics fulfillment chain [2]. This fabulous growth has coordination problems that, to the best of our knowledge, have yet to be solved. Up-to-date solutions for LMD do not contemplate a common support that helps the efficient coordination among the solutions. We believe this is a niche for using artificial intelligent approaches since the features of the scenario are complex and dynamic, and most importantly the big volume of data to be processed in an efficient and cooperative way calls for such technologies.

Last Mile Delivery and Sustainable Urban Logistic
Urban logistics [3] includes all activities ensuring that the material demands of these activities are satisfied. It includes all goods movements generated by the economic needs of local businesses, that is, all deliveries and collection of supplies, materials, parts, consumables, mail and refuse that businesses require to operate [4]. The scenario is highly complex and diverse since different economic sectors are hosted in a city; then, it is required to be provisioned by hundreds of different supply chains. The cost of urban logistic is almost 200% more expensive than in 1980. A sustainable urban logistic (or sustainable last mile logistic) is a system that performs well on both traditional measures (such as profit and loss) as well as on performance that includes social and natural dimensions [5]. In the specialized literature, few works that mix all the aspects of sustainable logistics were reported. The list of Morana in [6] is one of the most influential and useful studies. The Morana list is built from [7,8]. Some works analyze passenger travel [9, 10], whereas some contributions are reported for the modeling of delivery of parcels (see [11] for a stateof-the-art review on requirements and features of transport, mobility, and logistics in smart cities).

In [12], a multi-agent system simulation model is described for optimizing the distribution phase of parcels in supply chains management. A crowd-serving approach for LMD for brick-and-mortar retailers is proposed in [13]. The work described in [14] discusses the advantages of using new alternative delivery options.

China's LMD market [2] is a great example to understand the huge problem of a large market of LMD companies. It is anticipated that by 2023 the market size will be over 60 billion US Dollars. Nowadays, future e-commerce scenario is the principal driver for the development of LMD market. The express delivery market of the country is the largest in the world and accounts for almost 40% of the total delivery volume across the globe. These trends in China have led to a tremendously large list of express delivery companies that operate in all the big cities. The huge number of drivers from different LMD companies depicts a picture, in any big city in China, quite similar to a big swarm of bees all flying around. The big difference against the bees swarm is that the drivers from different LMD companies do not move in coordination and do not cooperate for efficiently distributing the parcels. Perhaps, we can “learn” from the bees in order to not lead the flowers and fruits die.

Conclusions

Summing up we believe there is an urgent need for intelligent collaborative services that can facilitate the interaction among different LMD companies in order to optimize the delivery routes. Such facilitating layer must rely on intelligent techniques in order to support the collaborative coordination among LMD companies that simultaneously work in a city (a B2B coordination). The features that must drive the collaboration among the companies may be multiple, i.e. economic, environmental, temporal, customer satisfaction, etc. The facilitating layer should allow using different and/or combined intelligent optimization criteria and can also benefic from Intelligent Service Oriented Architectures.

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