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Implementation of an emotion detection algorithm for therapy applications in children

1. Web application design

For the project was decided to develop a web application that lets the users manage the patients' sessions and have a register of all the performed sessions to see the record of each session and the results of the emotional analysis done by the tracking and recognition system.

For that purpose, a simple web application was designed, and the process will be explained in this part of the document.

1.1 Application wireframes

First of all, with the needs of the application the information to display is decided and how will be organized in the web application. To do this some wireframes were made to know what the result of the application will be.

Here will be shown the first version of the wireframes that were performed.

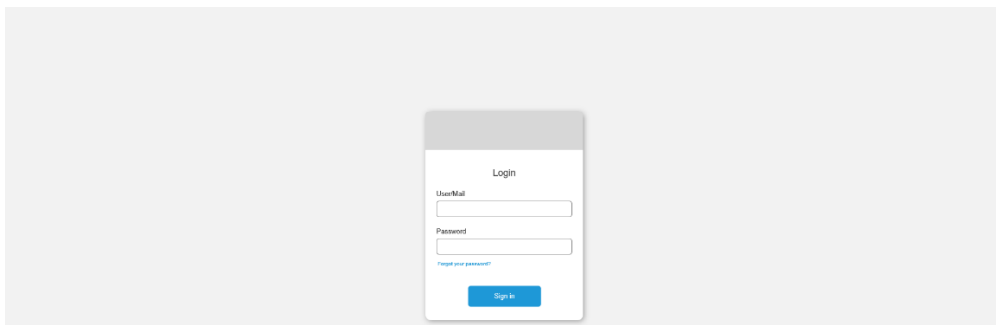


Figure 1: login page wireframe

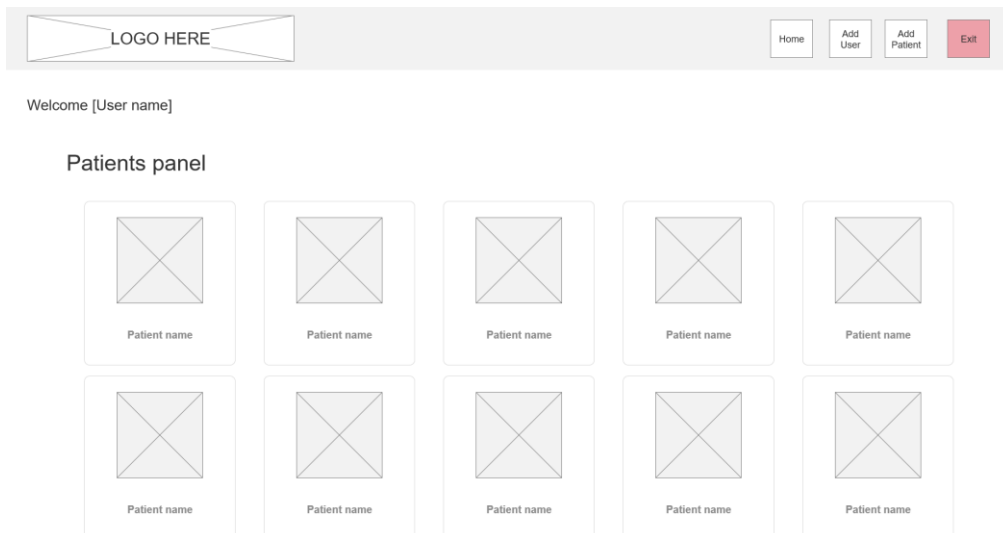


Figure 2 patients page wireframe

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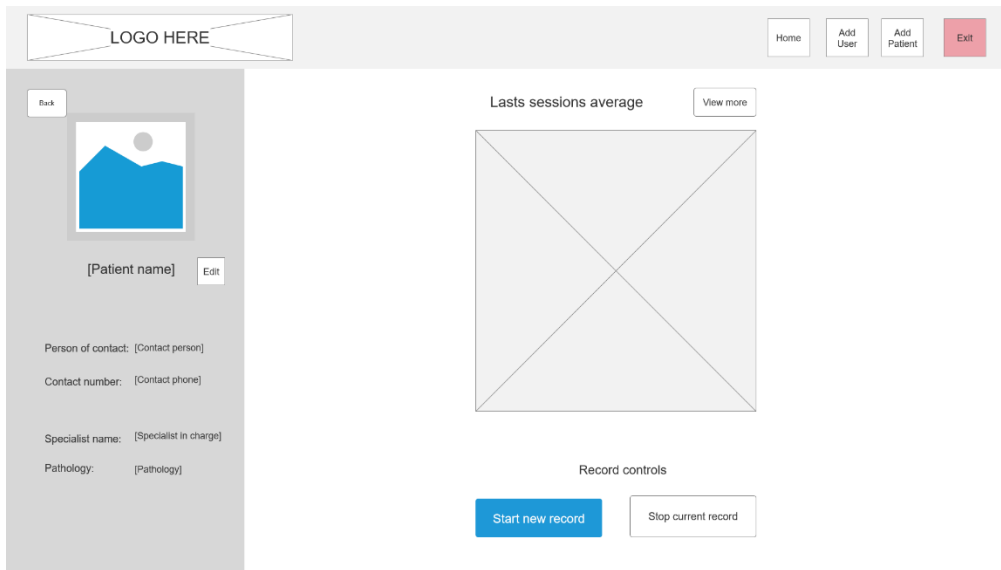


Figure 3: Patient page wireframe

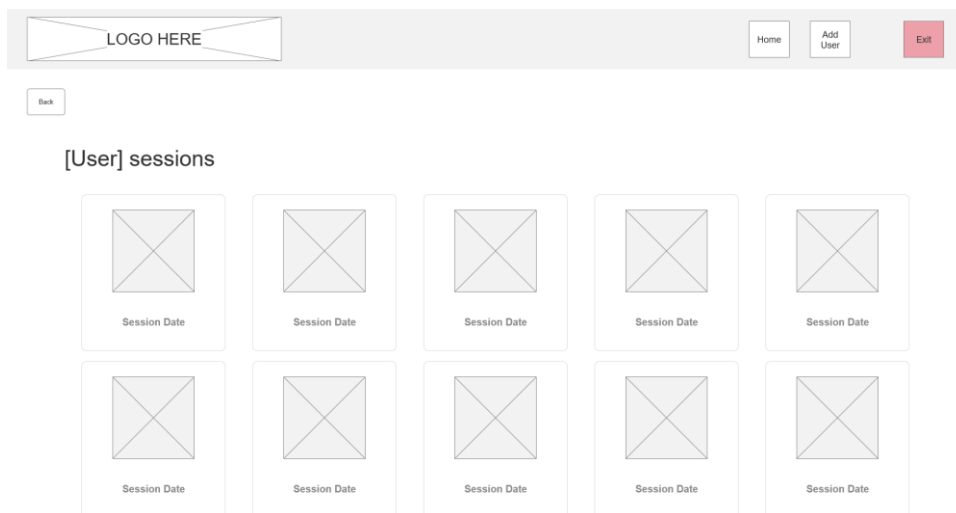


Figure 4: Patient sessions page wireframe

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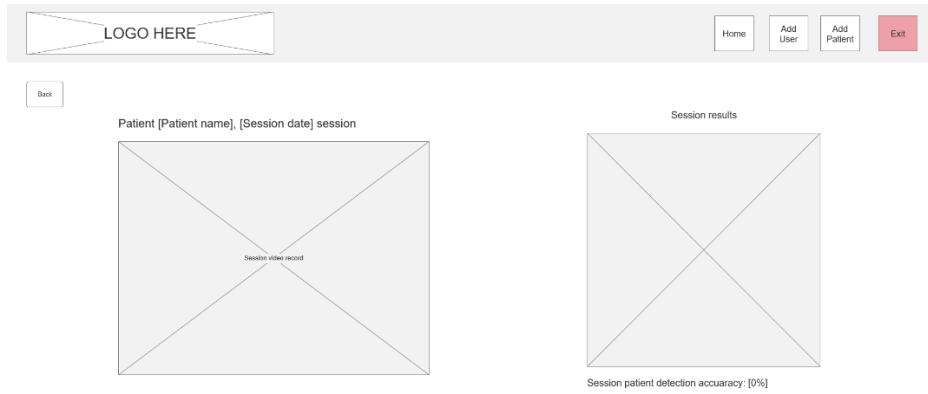


Figure 5: Patient session page wireframe

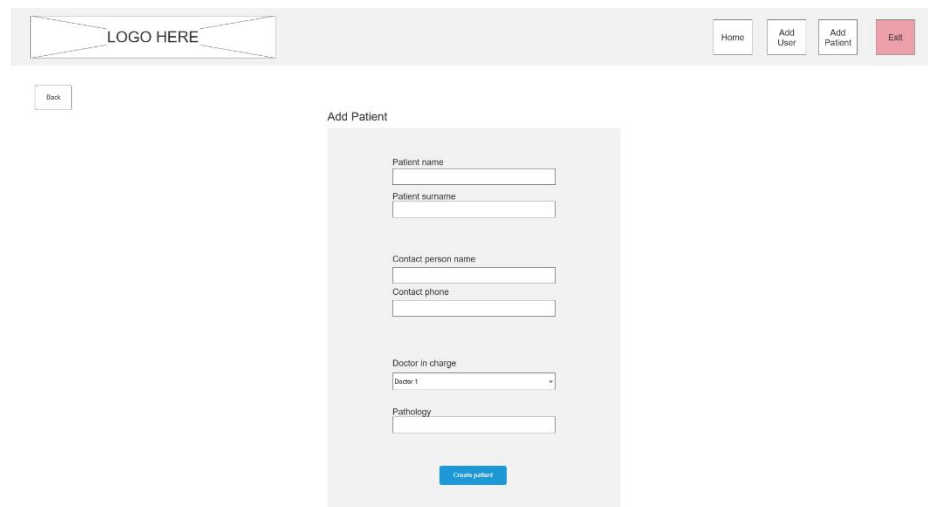


Figure 6: Add patient page wireframe

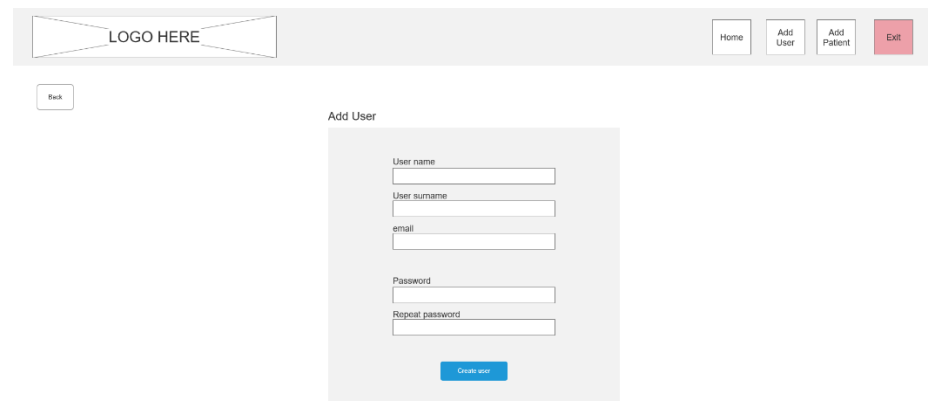


Figure 7: Add user page wireframe

The usage idea is simple, first of all have a login page just with the purpose of protect the data in the web application not allowing unknown users to have access to the patient's data especially considering its vulnerable data. The Figure 1 represents the idea of a little login modal dialog.

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When accessing the web, the Figure 2 displays all the patient in the system listed in a grid card format to easily identify the patient.

Accessing each patient clicking on it will let the user to see in the left part of the screen a side section with the personal information of the patient, an image, and the capability of edit this data. And in the center of the screen as a resume, a last sessions emotional analysis average to have an idea of the patient status as show in the Figure 3.

In that page, there is a button to show all the sessions history of that patient and the most important buttons, the start and stop record buttons.

In the sessions history that will be another grid of cards with the sessions sorted by dates as shown in the Figure 4, accessing to each session the Figure 5 shows that the idea is to could see the record of that session on the left and at the right side a chart with the emotional analysis results of that session record.

With all this the Figure 6 and Figure 7 are just forms to add users and patients to the system, noticing that this has some importance because one of the requested features by the clients was the possibility to know which therapist/user was in charge of each patient, so the feature to add users to the system and to let select a user for the patient were needed.

Knowing all this and looking at the result the conclusion reached was that there is a more effective way to display the patient information, reduce the number of pages cause the add patient and user pages has not many information as to be independent pages and still remain pages to edit the user information and to add or edit cameras to the system if needed.

So, before this line the final revision of the wireframes is shown considering that. As is exposed in the next figures (Figure 8, Figure 9, Figure 10, Figure 11 and Figure 12)

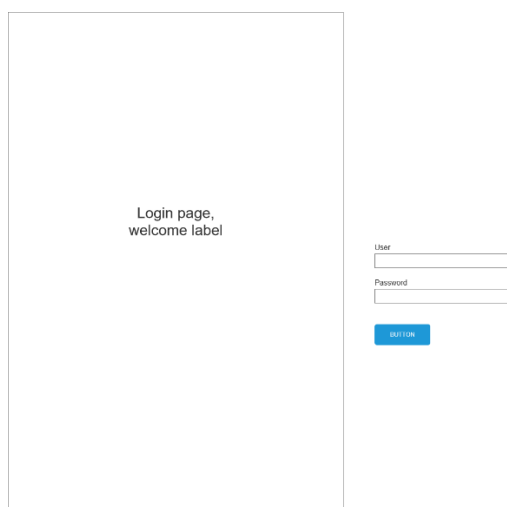


Figure 8: login page final wireframe

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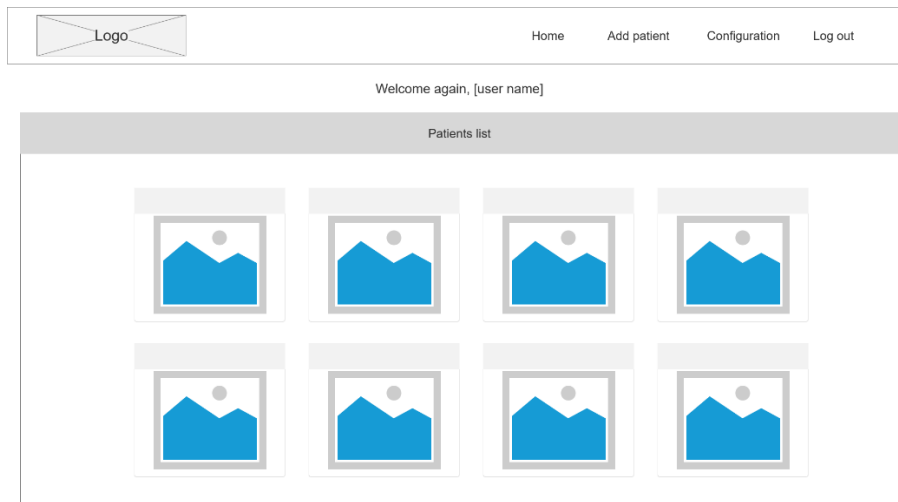


Figure 9: Home page final wireframe

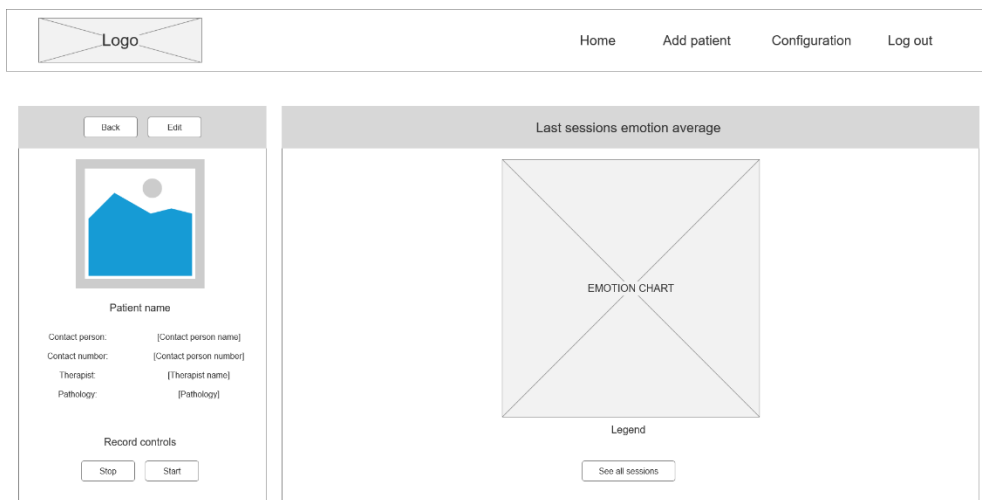


Figure 10: Patient details page final wireframe

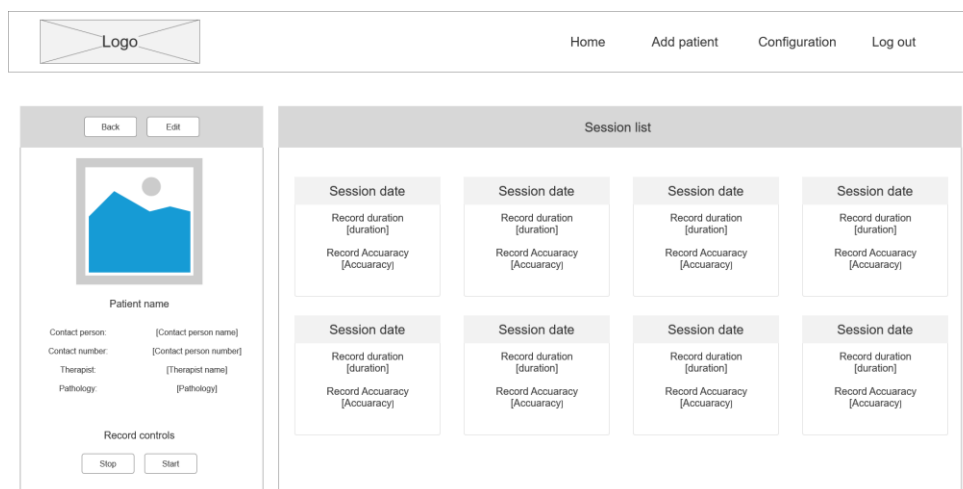


Figure 11: Patient sessions list page final wireframe

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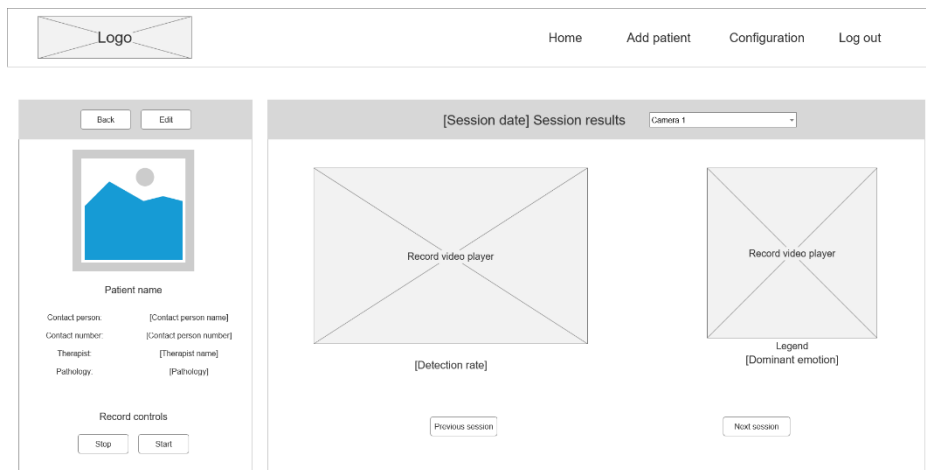


Figure 12: Patient session detail page final wireframe

Several changes were made, removing the use of pages for addition or edition of patients, users, or cameras, whereas a pop-up modal dialog will be used being everything more uniform and easier to use.

As for the elements layout everything is divided between spaces as in little windows being more clear what information is being displayed and not giving like an empty sensation .

Besides that when a patient is selected in the home page of the Figure 9, in the patient page, in the patient sessions and in the session detail of a patient all the user data will be visible in the left side panel, bringing a more clear navigation idea to the user and a more useful experience, having always present the record controls in that panel which are the most important controls in the application.



Figure 13: Configuration page final wireframe

Also, a configuration page was added to be able to manage the users and the cameras and its accessible from the top navigation bar, as is shown in the Figure 13

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1.2 Moodboard

A Moodboard was created to explore other similar applications developed and know more about the UX elements used as colors, spaces, and others to develop a the better UX possible. The moodboard is displayed in the Figure 14

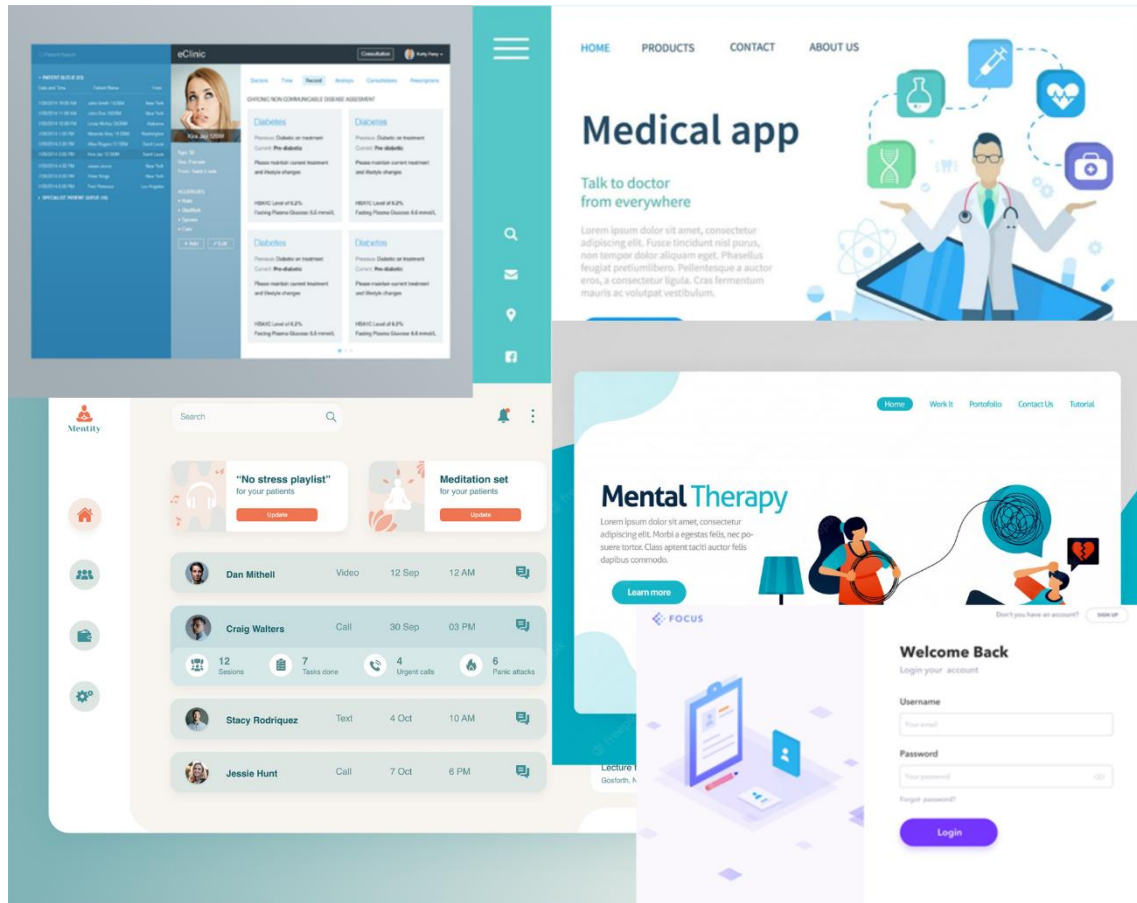


Figure 14: moodboard

Based on the previous moodboard some conclusions extracted to perform the design of the application were:

1. Main colors are usually blue or green, which emanates a peaceful and calm feeling to the users.
2. The used colors are usually light colors.
3. The elements in the screen trend to have rounded borders
4. The space between elements are clearly separated having enough visual space even when there are lots of information in the screen

1.3 Color palette

With the previous moodboard a color palette for the application was decided and is represented in the

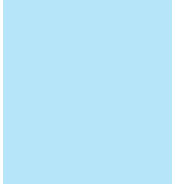
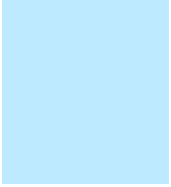
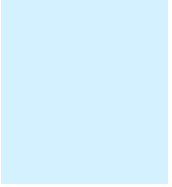
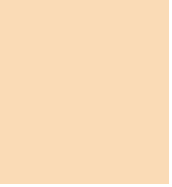
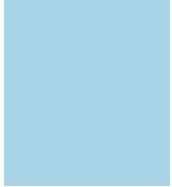
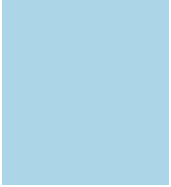
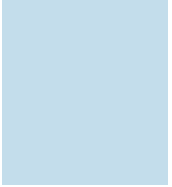
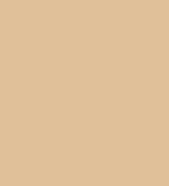
Darker than primary	Primary color	Lighter than primary	Primary Complementary	
				Light colors
#B6E5FA	#BDEAFF	#D4F1FF	#FADBB6	
				Dark colors
#aad4e8	#acd5e7	#c3dde8	#e0c099	

Figure 15: Color palette

1.4 Font used

For the font used, a clear font over than a stylized font was the election due to the purpose of the application, doing easy the comprehension of everything.

Some of the next fonts achieved that requirement (Figure 16 and Figure 17).

Whereas a common understanding of these rights and freedoms is

Whereas a common understanding of these rights and freedoms is

Figure 16: Fonts Noto Sans (left) and Lato (right)

No one shall be held in slavery or servitude; slavery and the slave trade shall be prohibited in all their forms.

Figure 17: Font Monserat

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1.5 Mockup/HF Design

Based on the previous points, with the wireframes, the moodboard, color palette and the font election, HF Designs were performed to see how a possible final result of the application will be, as shown in the next figures (Figure 18, Figure 19, Figure 20, Figure 21, Figure 22 and Figure 23)

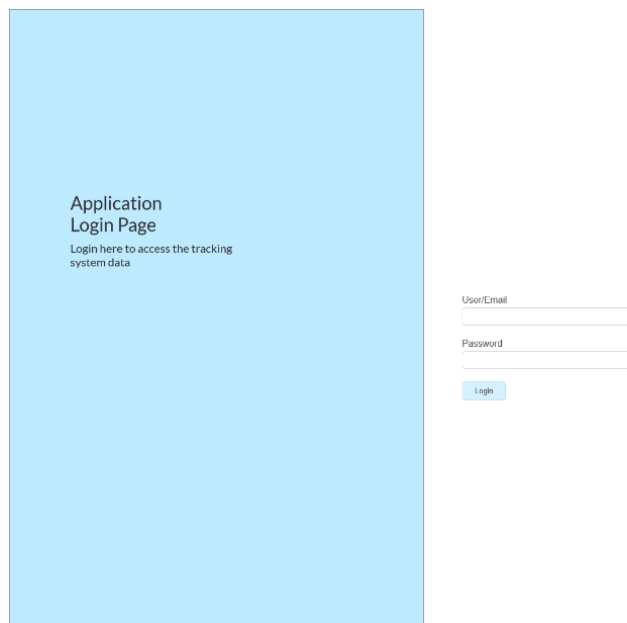


Figure 18: Login page HF Design

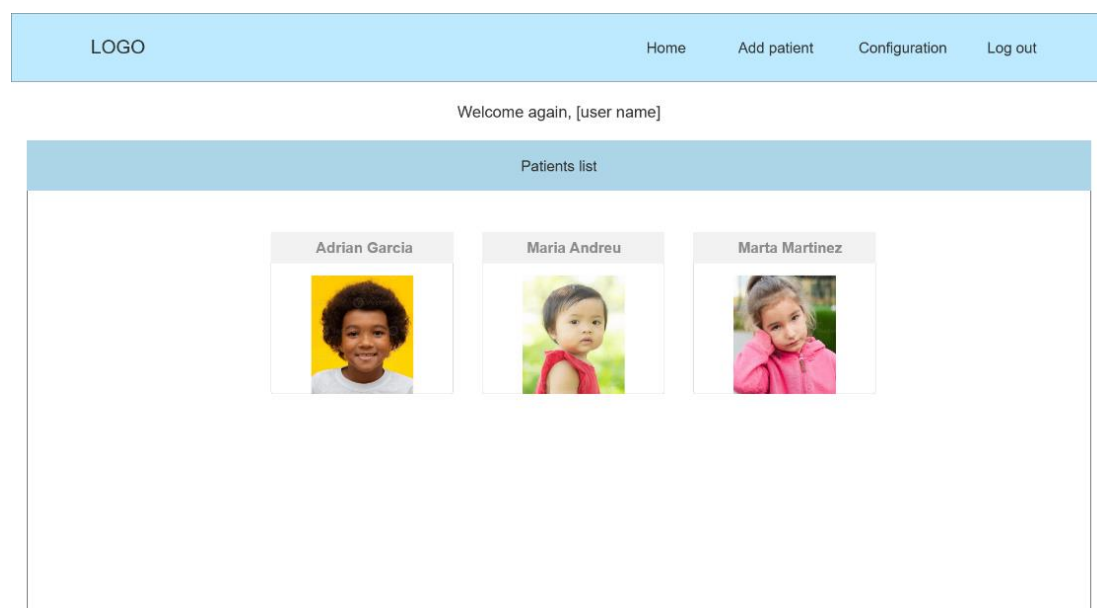


Figure 19: Home page HF Design

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Figure 20: Patient page HF Design

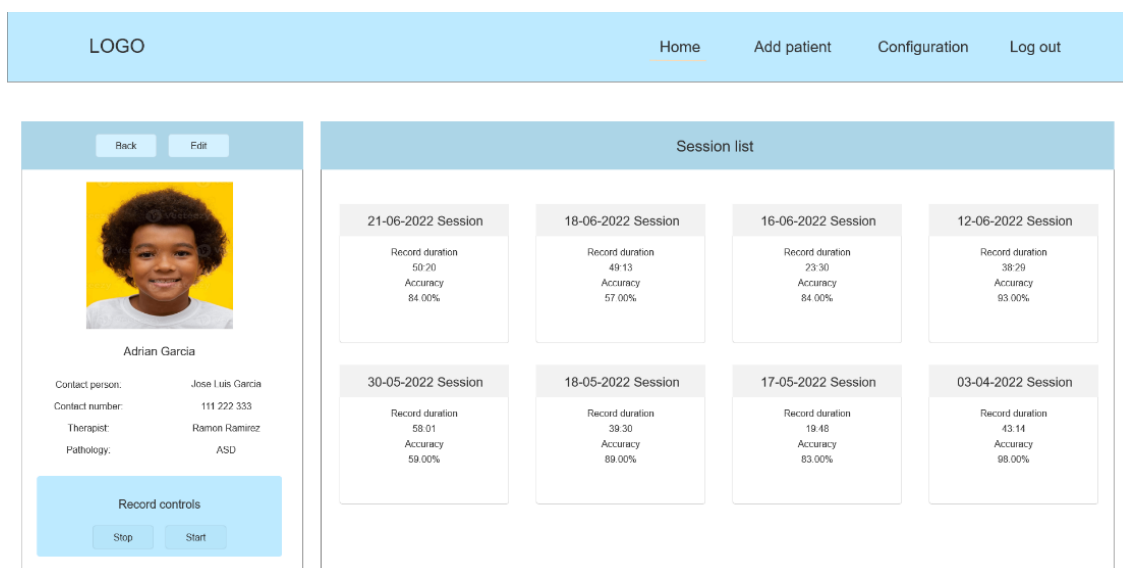


Figure 21: Patient sessions page HF Design

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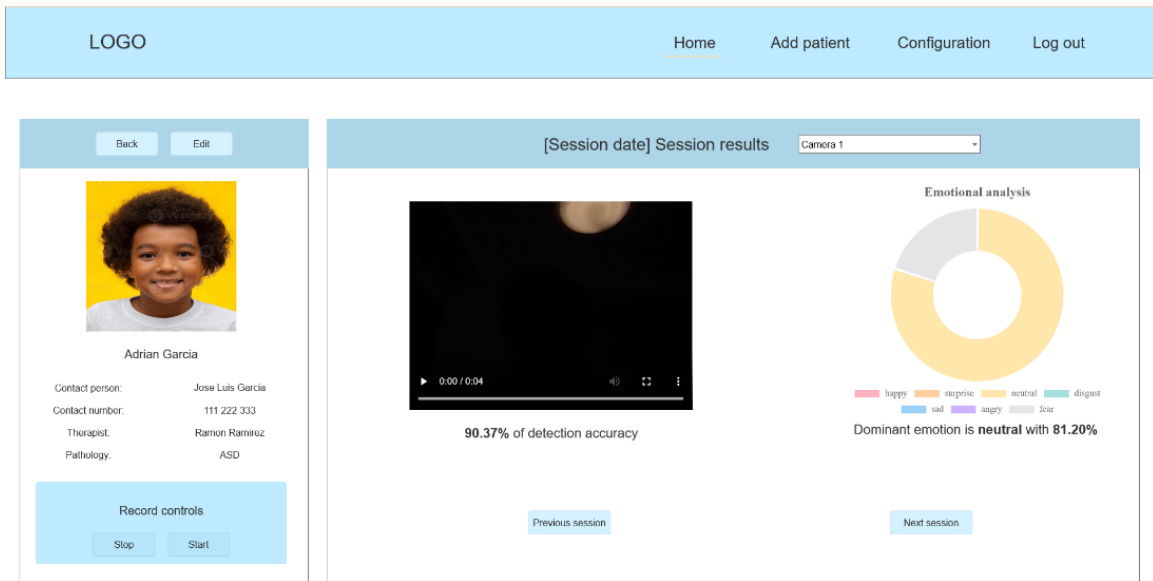


Figure 22: Patient session details page HF design



Figure 23: Configuration page HF Design

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1.6 Final result

Having the HF designs made, the web was developed with the next results displayed in the Figure 24, Figure 25, Figure 26, Figure 27, Figure 28, Figure 29, Figure 30 and Figure 31

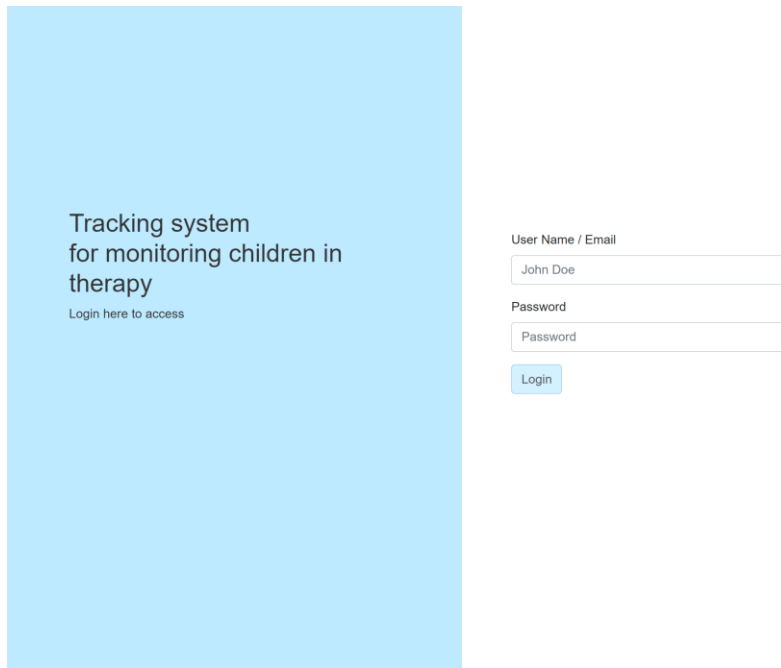


Figure 24: login page

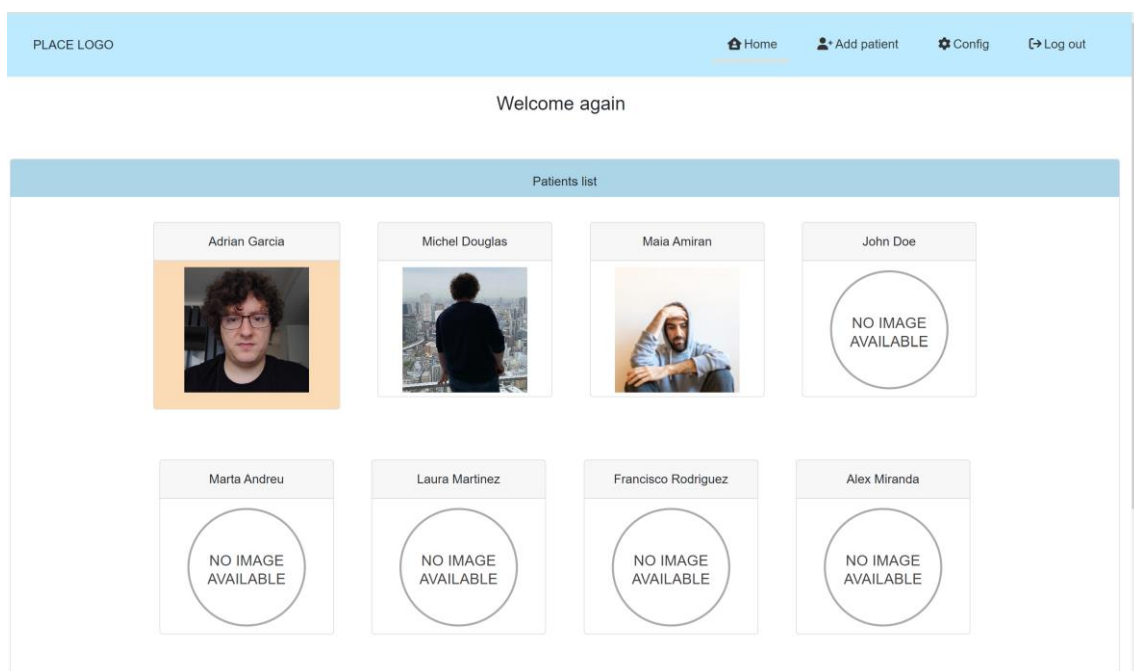


Figure 25: Home page with patients list

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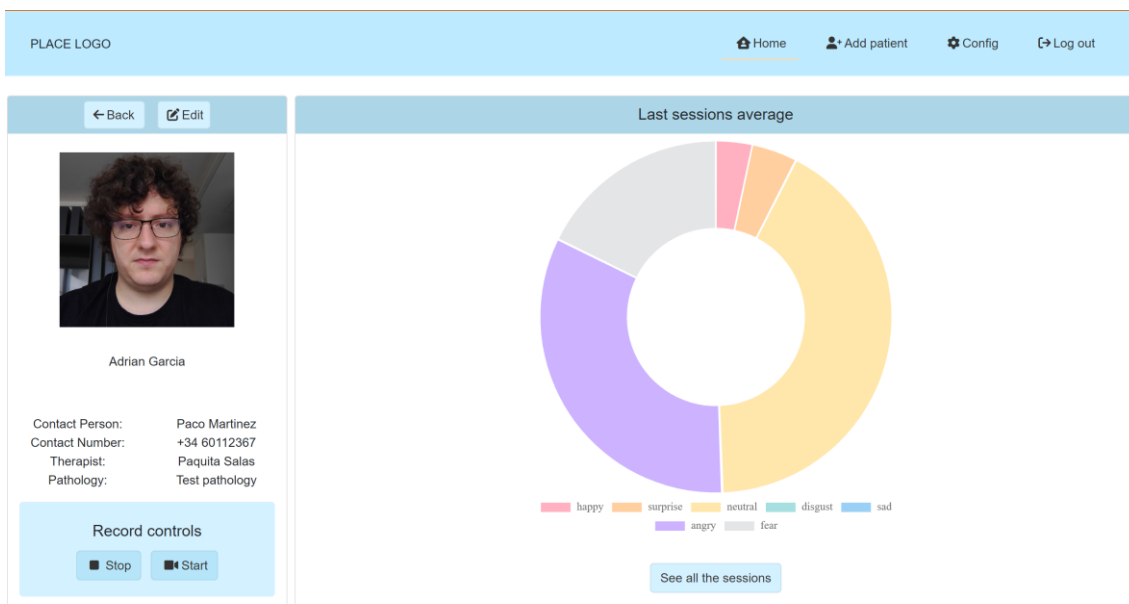


Figure 26: Patient page

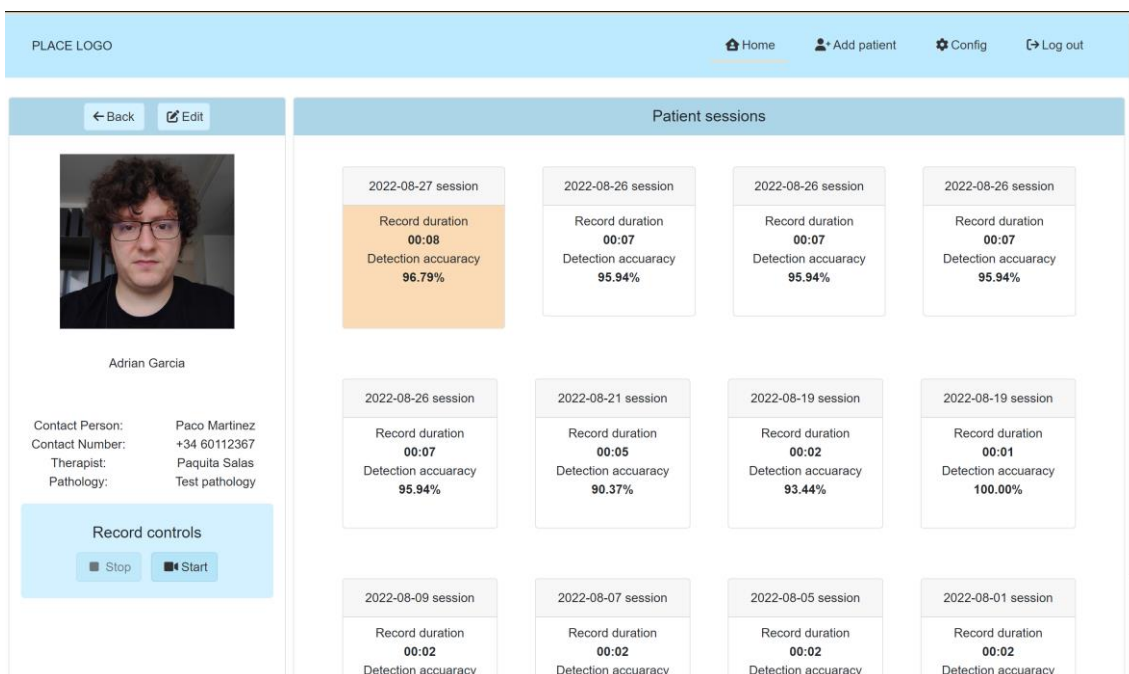


Figure 27: Patient sessions list page

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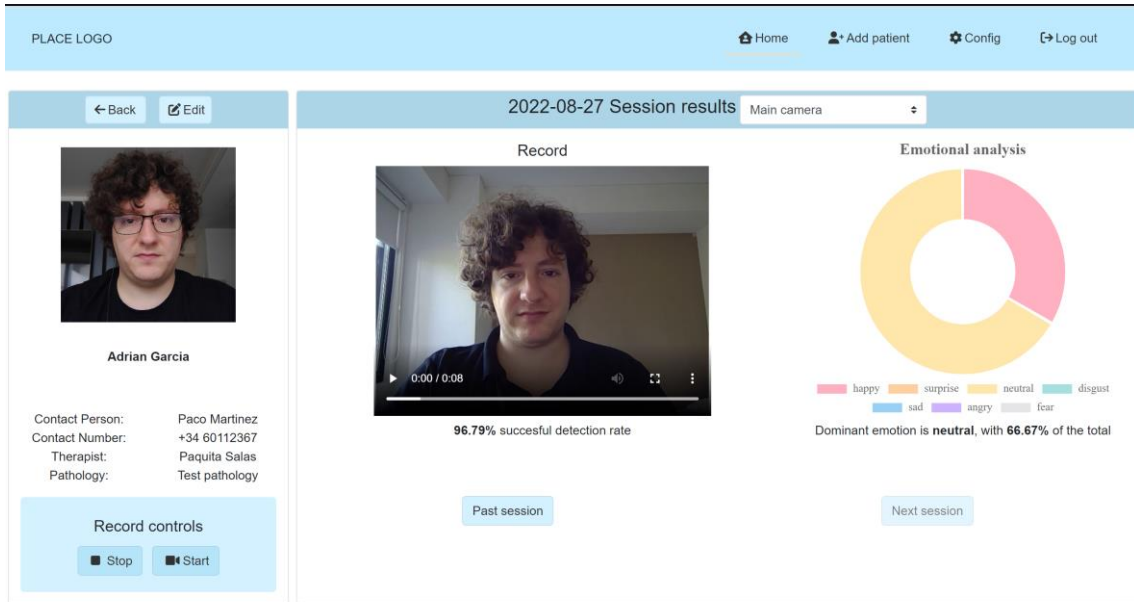


Figure 28: Patient session details page

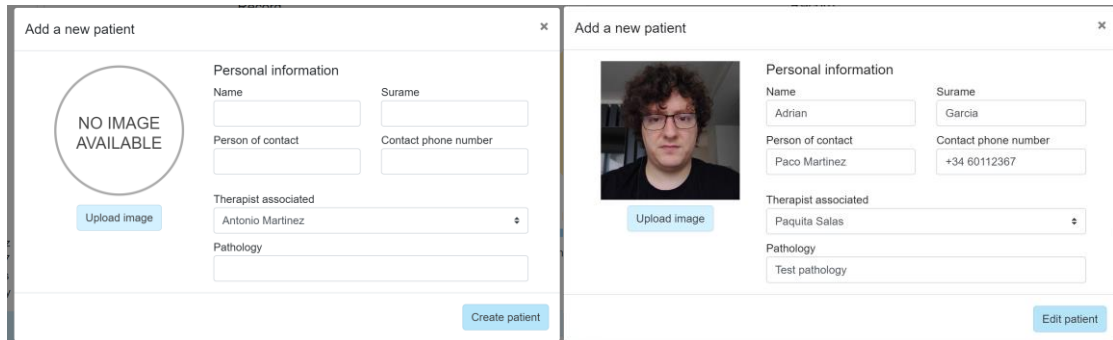


Figure 29: Add patient dialog (left) and edit patient dialog (right)

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The screenshot shows a web application interface with a light blue header. The header contains a placeholder 'PLACE LOGO' on the left and navigation links 'Home', 'Add patient', 'Config', and 'Log out' on the right. Below the header, there are two main panels. The left panel is titled 'System users' and has a 'New user' button. It contains a table with columns 'Name', 'Surname', 'Email', and 'Actions'. The table lists three users: 'admin' (email: edgaran@epsg.upv.es), 'Antonio Martinez' (email: newtestmail@gmail.com), and 'Paquita Salas' (email: emaildeprueba@gmail.com). Each user has edit and delete icons in the 'Actions' column. The right panel is titled 'System cameras' and has a 'New camera' button. It contains a table with columns 'Name', 'IP Address', 'Port', and 'Actions'. The table lists two cameras: 'Main camera' (IP: 127.0.0.1, Port: 5002) and 'Other camera' (IP: 127.0.0.1, Port: 40). Each camera has edit and delete icons in the 'Actions' column.

Figure 30: Configuration page to manage users and cameras

The image shows two side-by-side dialog boxes. The left dialog is titled 'Add new user' and contains a 'Personal information' section with fields for 'Name', 'Surname', 'email', 'Password', and 'Repeat Password'. It has 'Cancel' and 'Create user' buttons at the bottom. The right dialog is titled 'Add new camera' and contains a 'Camera information' section with fields for 'Name', 'IP Address', and 'Socket Port'. It has 'Cancel' and 'Create camera' buttons at the bottom.

Figure 31: Add user (left) and add camera (right) dialogs