

Contents

1.	Introduction	3
2.	Technical description	3
3.	Login	4
4.	House Doctors	5
	4.1. Dashboard	5
	4.2. Patients	6
	4.3. Al Prediction	6
	4.4. Prediction Results	7
	4.5. Get an explanation	8
	4.6. Boon an Appointment Calendar	8
	4.6.1. Book an Appointment Restrictions	.11
	4.7. Archives	.12
5.	Cardiologists	.13
	5.1. Dashboard	.13
	5.2. Calendar	.14
	5.2.1. Create new appointment	.15
	5.2.2. Edit an appointment	.16
	5.3. Patients	.19
	5.4. Archives	.20
6.	Documents	.21
	6.1. Videos	.21
	6.1.1. Add new video	.22
	6.1.2. Video player	.23
	6.1.3. Edit the video	.23
	6.1.4. Delete the video	.24
	6.2. File System	. 25
	6.2.1. Document Upload	.26
	6.2.2. Document Download	.26
7.	Contacts	.27
	7.1. House Doctors contact information	.27
	7.2. Cardiologists contact information	.27
8.	Visibility Mode	.28
9.	Download the User Manual	.29

1. Introduction

The User Manual serves as a comprehensive guide to all the possibilities and functionalities provided by the FromHearty application.

We will provide you with an overview of key aspects of the application, emphasizing how to make the most of all its features.

Thank you for being a part of our community; we wish you a successful and pleasant experience using the FromHearty application!

2. Technical description

In the technical realm of our project, we envision a robust implementation aimed at utilizing Microsoft's cutting-edge technologies to bolster our Al-driven healthcare solution. Our application's backbone will be formed by a combination of Angular for the frontend and .NET for the backend, ensuring a seamless, dynamic, secure and smooth user experience, to both patients and healthcare providers.

For the implementation of artificial intelligence (AI) in our diagnostic processes, we've chosen to leverage the ML.NET NuGet package.

This package will serve as the cornerstone of our AI capabilities, empowering our application to analyze patient data comprehensively and provide precise and quick diagnoses of cardiovascular diseases. By integrating ML.NET into our system, we're embracing advanced learning algorithms to enhance our diagnostic accuracy, surpassing traditional assessments performed by healthcare professionals. While we adhere to ML.NET, exploring alternatives like TensorFlow could expand our machine learning options.

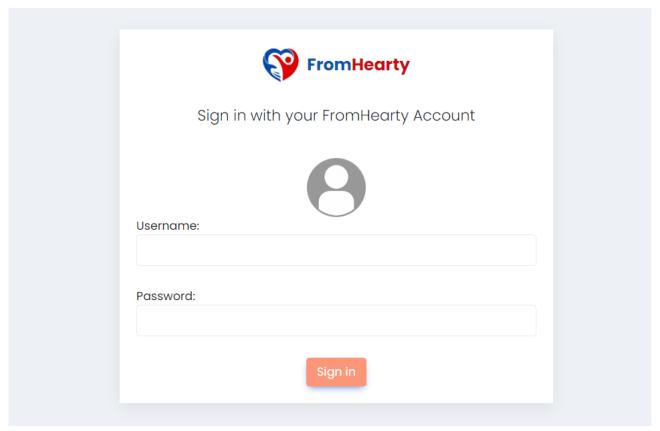
In essence, our utilization of ML.NET aligns with responsible AI practices by fostering transparency, adaptability, and stringent data security, ensuring that our AI-driven healthcare solution meets ethical standards throughout its deployment.

Furthermore, to ensure the scalability, efficiency, and accessibility of our application, we've opted to host it on Microsoft's Azure cloud platform. Azure will not only provide a robust infrastructure but also enable seamless integration with a myriad of Azure services, fostering real-time communication and data processing.

3. Login

The application provides a secure login system. There are two types of users in the system: House Doctors and Cardiologists. To log in to the application, the user enters their username (email) and password. The email address serves as the unique username in the system.

Upon successful login, the user will be directed to the interface corresponding to their predefined user role.



Login

The access credentials for each role are displayed in the table below:

Role	URL	Username (E-mail)	Password
House Doctor	https://muhamedkarajic.github.io/from-hearty/#/	malaya.bradley@edu.fit.ba	IC2024
Cardiologist	https://muhamedkarajic.github.io/from-hearty/#/	alexia.weiss@edu.fit.ba	IC2024

Access credentials

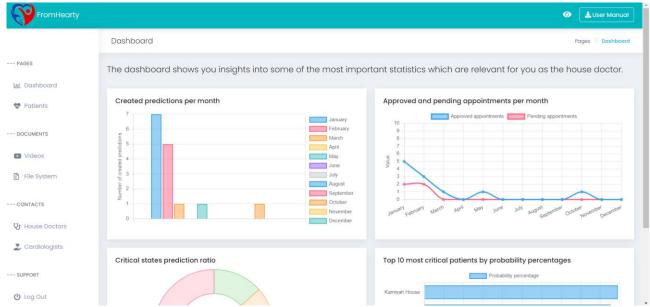
4. House Doctors

4.1. Dashboard

On the "Dashboard," users are provided with a visual representation of information through graphical elements. Various categories are presented, offering an intuitive and aesthetically pleasing experience to users.

Users have the ability to view:

- Created predictions per month
- Approved and pending appointments per month
- Critical states prediction ratio
- Top 10 most critical patients by probability percentages



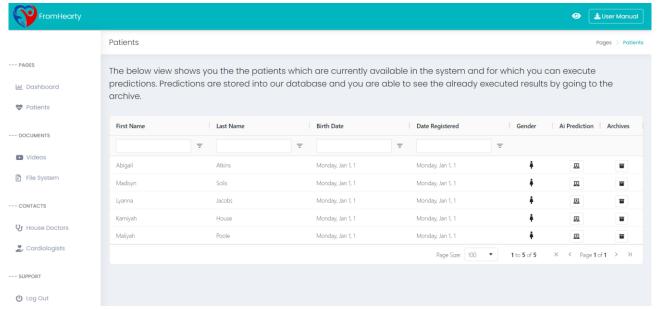
Dashboards (first half of the page)



Dashboards (second half of the page)

4.2. Patients

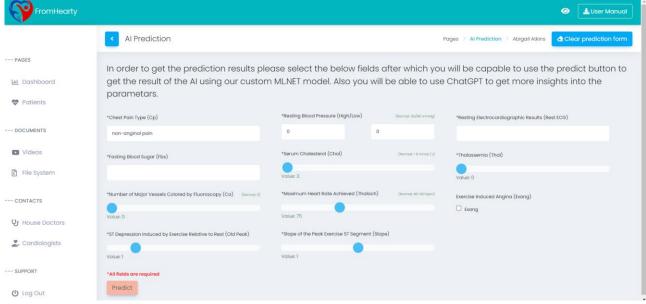
The House Doctors has the ability to access the list of their patients, as well as insights into their archives, including the AI prediction option.



Patients

4.3. Al Prediction

Al Prediction is the process of analyzing the risk of cardiovascular diseases for a specific patient using artificial intelligence. The Al Prediction form opens for the house doctor when they click on the Al Prediction button in the patient grid corresponding to the selected patient.



AI Prediction form

Upon obtaining results, the House Doctors assess the need for potential additional examinations by a specialist doctor. If specialist services are required, they schedule an appointment using the calendar (Book an Appointment).

Parameters included in the analysis of the risk of cardiovascular diseases are:

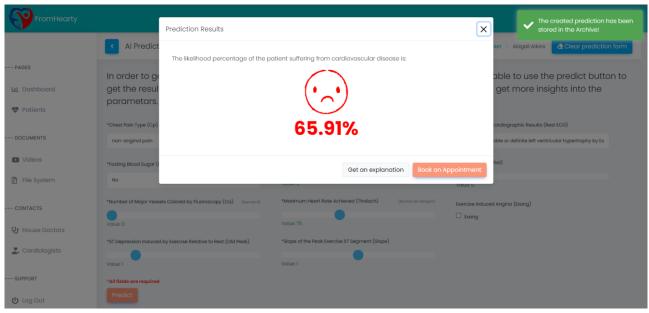
- Chest Pain Type (Cp);
- 2. Fasting Blood Sugar (Fbs);
- 3. Exercise Induced Angina (Exang);
- 4. Number of Major Vessels Colored by Fluoroscopy (Ca);
- 5. Resting Blood Pressure (High/Low);
- 6. Resting Electrocardiographic Results (Rest ECG);
- 7. ST Depression Induced by Exercise Relative to Rest (Old Peak);
- 8. Thalassemia (Thal);
- 9. Serum Cholesterol (Chol);
- 10. Maximum Heart Rate Achieved (Thalach);
- 11. Slope of the Peak Exercise ST Segment (Slope);

Description of the key options:

- Predict risk analysis based on entered data;
- Book an Appointment calendar for scheduling appointments;
- Get a detailed explanation Explanation for the obtained results provided by Chat GPT;
- Clear prediction form Erase entered data;

4.4. Prediction Results

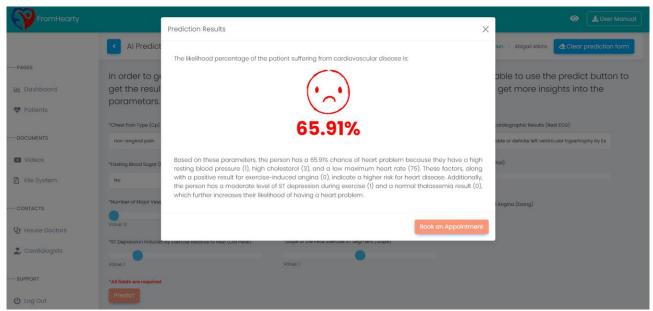
After clicking the 'Predict' button on the AI Prediction form, the results are displayed in the 'Results Prediction' popup, where the doctor has the option to obtain a more detailed explanation from Chat GPT about the obtained prediction results or to create an appointment by clicking on 'Book an Appointment'.



Prediction Results popup

4.5. Get an explanation

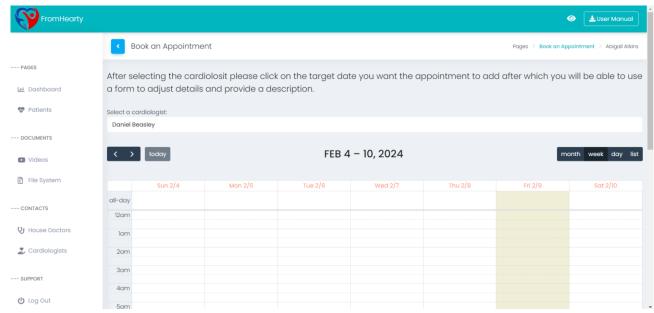
The 'Get an explanation' button displays the explanation provided by Chat GPT for the obtained results.



Explanation provided by Chat GPT for the obtained results

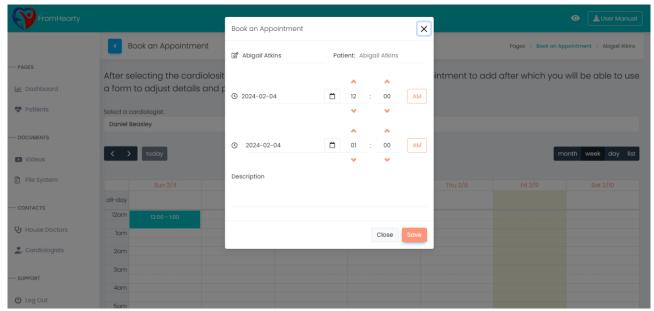
4.6. Boon an Appointment Calendar

The 'Book an Appointment' option directs the doctor to the calendar, where they have the possibility to select a cardiologist to schedule a specialist appointment for a patient for whom a previous AI prediction of cardiovascular diseases has been made:



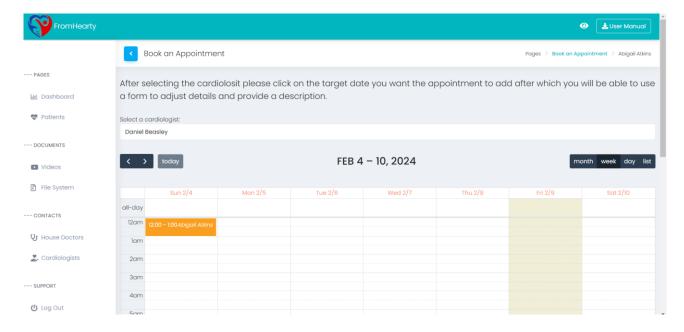
Book an Appointment Calendar for House Doctor

By selecting the desired appointment slot, a popup opens for entering details about the specialist examination.



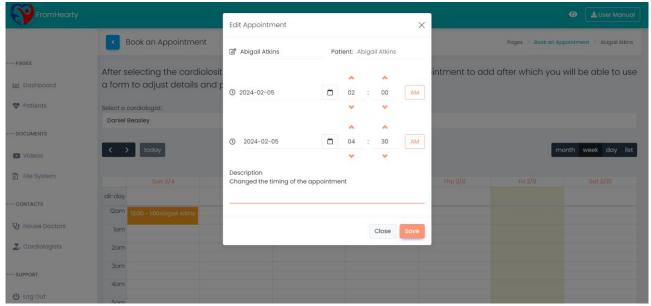
Book an Appointment popup

After the house doctor creates an appointment, it appears in orange on the calendar because it hasn't been approved yet. Only the cardiologist has the authority to approve the appointment, after which it turns green. Until the appointment is approved, the house doctor can edit it.



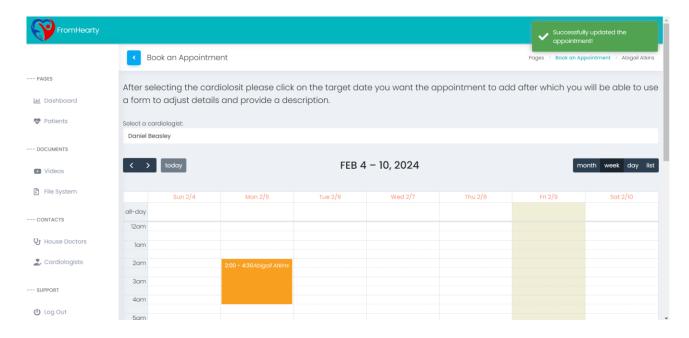
Appointment on the calendar displayed in orange color (hasn't been approved yet)

Every appointment that is not approved (in orange color) can be edited by the house doctor. They can change the title, description, or the timing of the appointment:



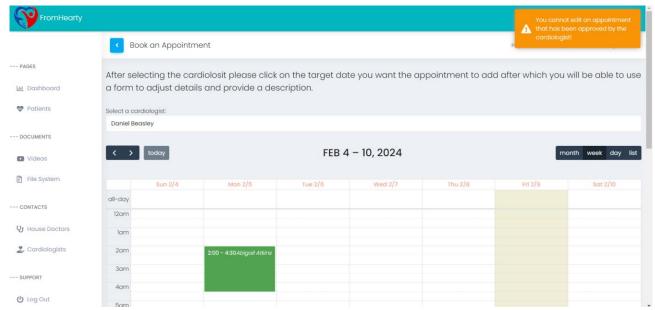
Popup for editing an existing appointment

After editing the appointment, if the timing of the appointment is changed, it is rescheduled on the calendar, and a success message is displayed in the top right corner of the screen.



Success message and appointment rescheduling after editing the appointment

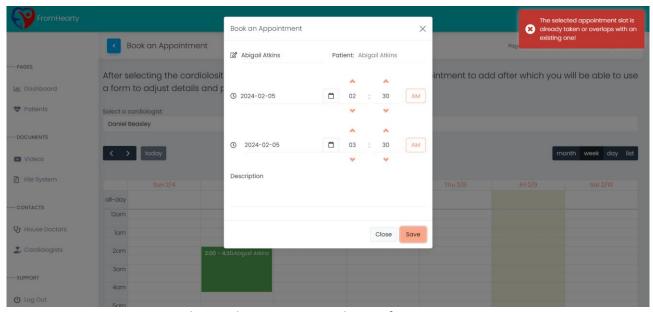
After the cardiologist approves the appointment, it turns green on the calendar for both the cardiologist and the house doctor. By clicking on the green appointment, the house doctor receives a warning message that they cannot edit the appointment as the cardiologist has already approved it.



Warning message indicating that an approved appointment cannot be edited

4.6.1. Book an Appointment Restrictions

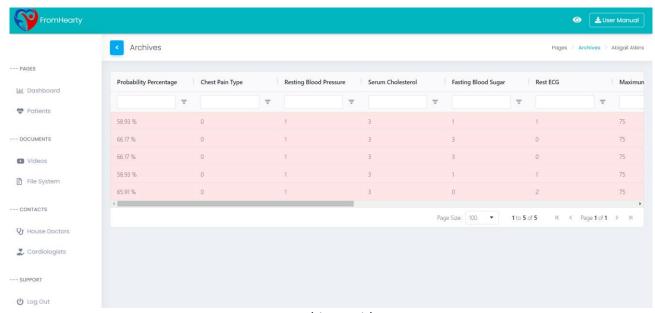
If a doctor or cardiologist attempts to schedule a new appointment or edit an existing one at a time slot on the calendar that is already reserved, they will receive an error message indicating that the slot is already occupied. This prevents appointment overlaps.



Limitation during the creation or editing of existing appointments

4.7. Archives

From the Patients grid (explained in section 4.2.), the doctor can review the history of AI predictions made for the selected patient by clicking on the button in the Archives column. In the archive, grid rows are colored according to the probability percentage (high probability - red color, low probability - green color).



Archives grid

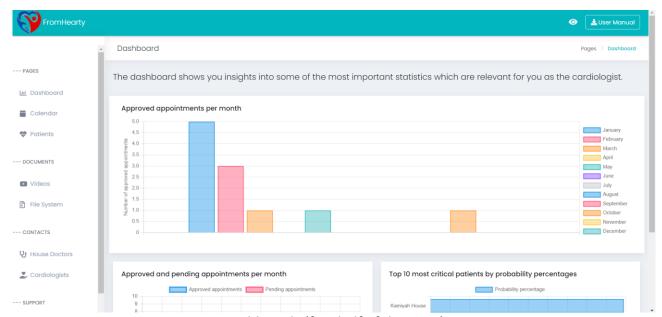
5. Cardiologists

5.1. Dashboard

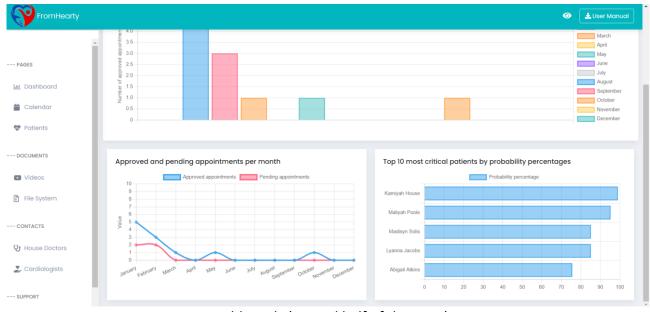
On the "Dashboard," users are provided with a visual representation of information through graphical elements. Various categories are presented, offering an intuitive and aesthetically pleasing experience to users.

Users have the ability to view:

- Approved appointments per month
- Approved and pending appointments per month
- Top 10 most critical patients by probability percentages



Dashboards (first half of the page)



Dashboards (second half of the page)

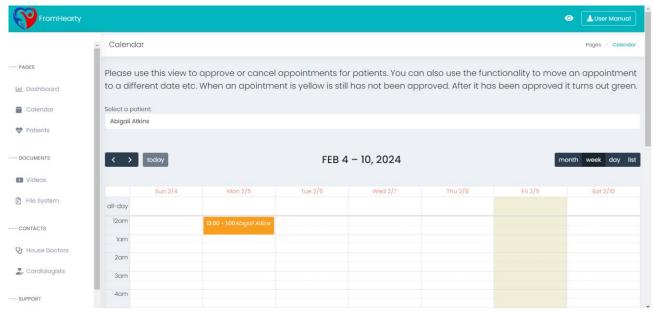
5.2. Calendar

The "Calendar" option allows for an easy overview of scheduled appointments with patients. This intuitive tool provides a comprehensive view of appointments, facilitating the organization and time optimization for the Cardiologists.

The user has the following options:

- Review of scheduled appointments by patient;
- Approving and cancelling appointments
- Creating new appointments
- Display of the calendar by: month, week, day, and list;

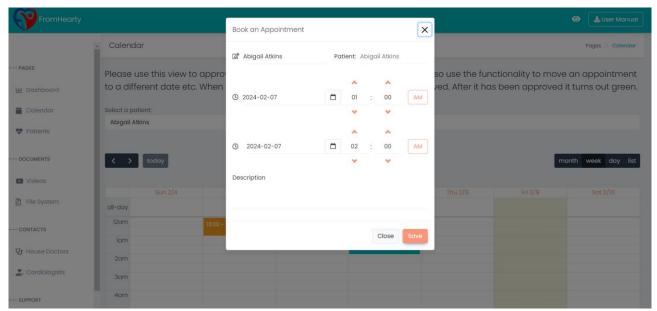
By clicking on a specific date/appointment in the calendar, the user has the following options: edit, cancel, and accept the scheduled appointment.



Calendar

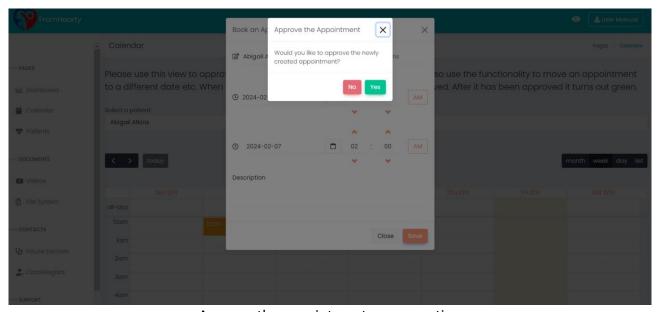
5.2.1. Create new appointment

By selecting the desired time slot on the calendar and the patient from the dropdown list, the cardiologist has the option to create a new appointment.



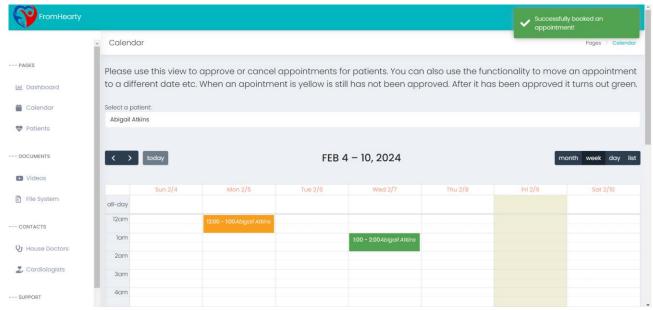
Book an appointment

The process of booking an appointment with the cardiologist is the same as with the house doctor, the main difference being that the cardiologist has the option to approve the appointment immediately after creating it.



Approve the appointment upon creation

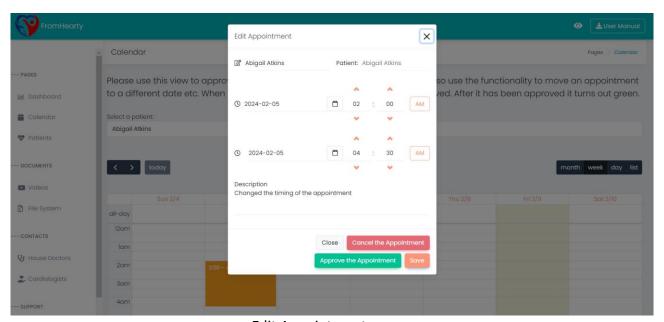
If the appointment is approved after creation, it automatically turns green. Upon creating the appointment, a success message is displayed confirming the successful creation of the new appointment.



Success message for creating a new appointment

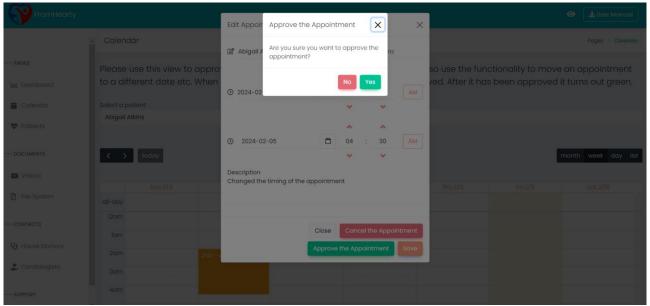
5.2.2. Edit an appointment

When selecting an existing appointment on the calendar, a popup for editing the appointment opens, where, upon changing the appointment details, the appointment can also be approved or canceled.



Edit Appointment popup

If the cardiologist selects the option to approve the appointment, a confirmation popup for approving the appointment is displayed.



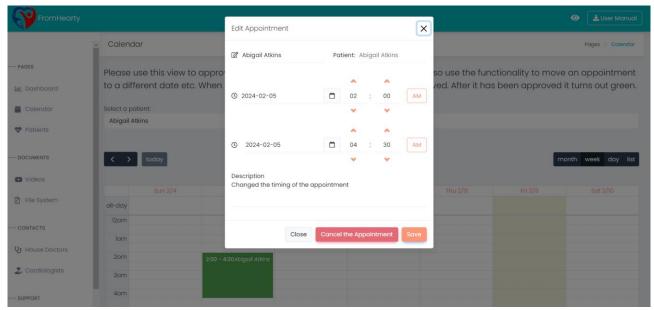
Confirmation popup for approving the appointment

After successfully approving the appointment, it turns green on the calendar, and a success message is displayed confirming the successful editing of the existing appointment.



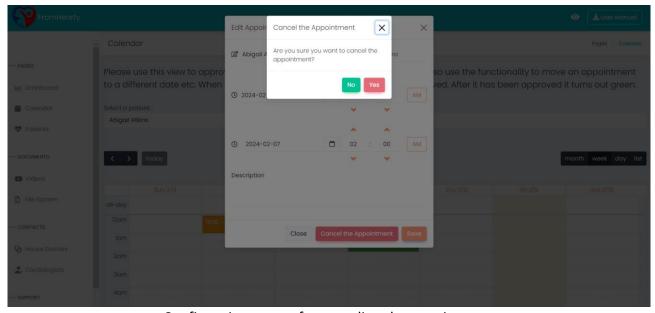
Success message for editing an existing appointment

If the appointment is approved, upon reopening the edit popup, the option to approve the appointment is no longer available, as it has already been approved by the cardiologist. Consequently, it is no longer editable for the house doctor and appears green for them as well.



Approve the Appointment option no longer available when the appointment is approved

If the cardiologist decides to cancel the appointment, upon opening the edit appointment popup, there is an option to cancel the appointment. By clicking the 'Cancel the Appointment' button, a confirmation popup for canceling the appointment is displayed.



Confirmation popup for canceling the appointment

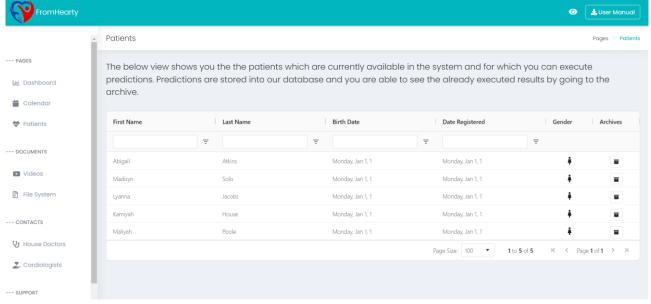
After canceling the appointment, a success message is displayed confirming the successful removal of the appointment. It is no longer available on the calendar for both the cardiologist and the house doctor.



Success message for cancellation of the appointment

5.3. Patients

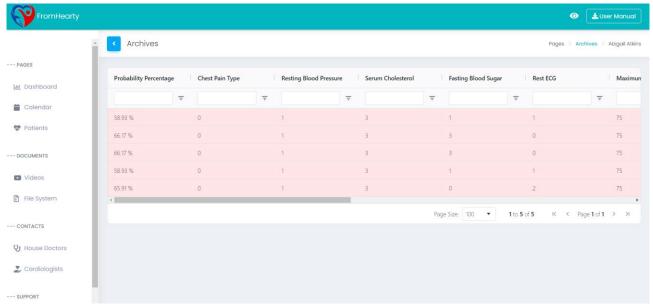
The cardiologist has the right to access the complete list of patients. For each patient, the doctor has access to the archive of all previously conducted examinations. Based on specialist examinations, the doctor decides whether to accept or reject the results obtained from "AI Prediction".



Patients

5.4. Archives

From the Patients grid (explained in section 5.3.), the cardiologist can review the history of AI predictions made for the selected patient by clicking on the button in the Archives column. In the archive, grid rows are colored according to the probability percentage (high probability - red color, low probability - green color).



Archives grid

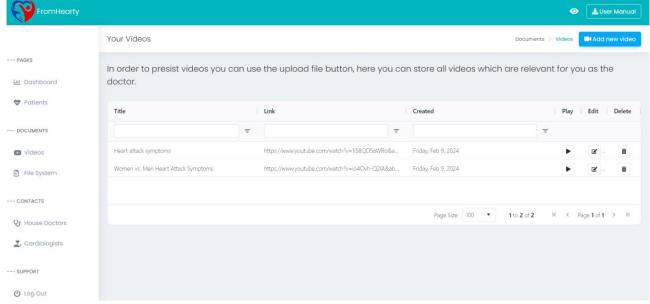
6. Documents

The application provides the capability to add documents and multimedia content. Whether it's textual documents, or video recordings, our platform allows you to quickly and efficiently input desired information.

Through a user-friendly interface, users can easily add documents from their devices or other sources. The application supports various file formats, ensuring compatibility with different types of content.

6.1. Videos

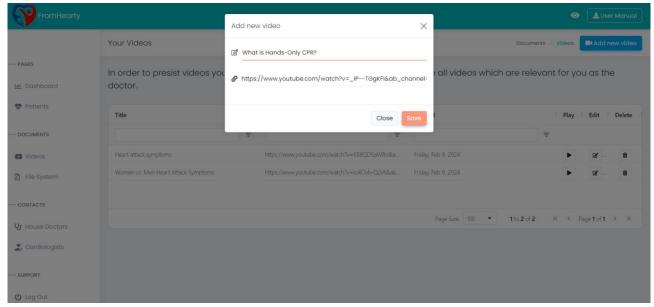
In the Videos section, doctors and cardiologists can review all the videos they have added, which they consider relevant. Additionally, they can add new videos, edit existing ones, or delete specific videos from the archive.



Your Videos grid

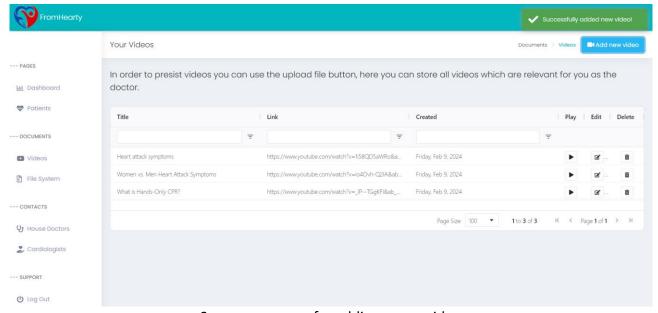
6.1.1. Add new video

By clicking on the 'Add new video' button, a popup opens where the house doctor or cardiologist can enter the link and title of the video they are adding.



Add new video popup

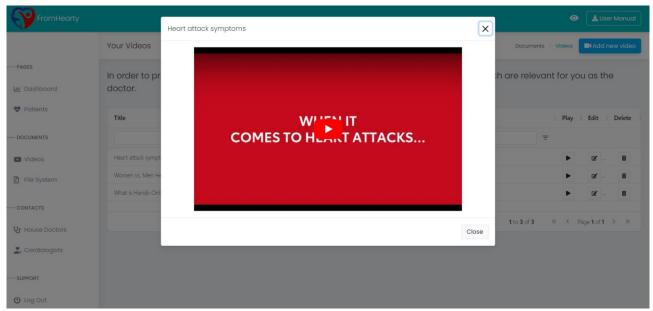
After adding the video, the house doctor or cardiologist is shown a success message confirming the successful addition of the new video.



Success message for adding a new video

6.1.2. Video player

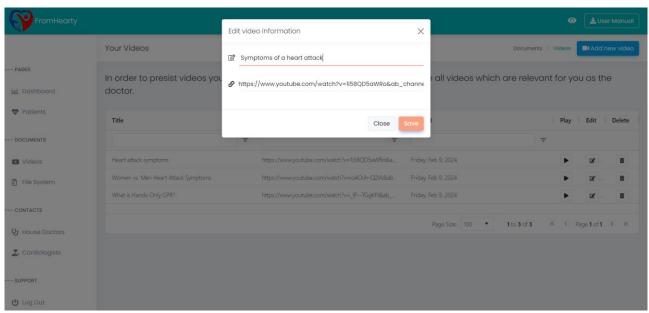
After selecting the desired video, clicking the 'Play' button opens a popup with the selected video, which the house doctor or cardiologist can then view.



Video player popup

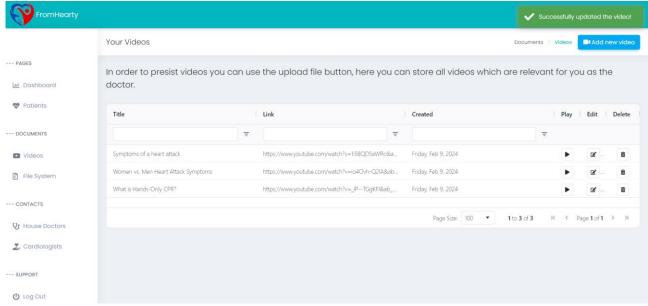
6.1.3. Edit the video

After selecting the desired video in the grid, clicking the edit button opens a popup for editing the video information.



Edit video information popup

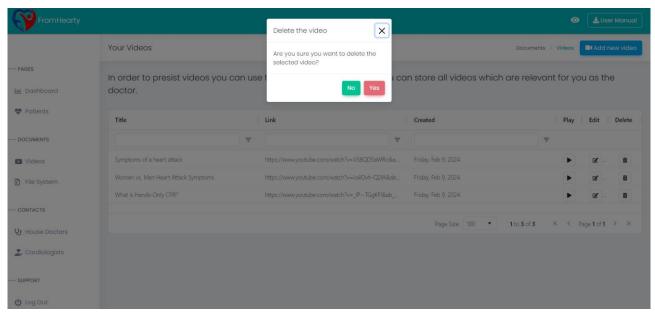
After successfully editing the video, a success message is displayed confirming the successful editing of the video information.



Success message displayed after editing the video

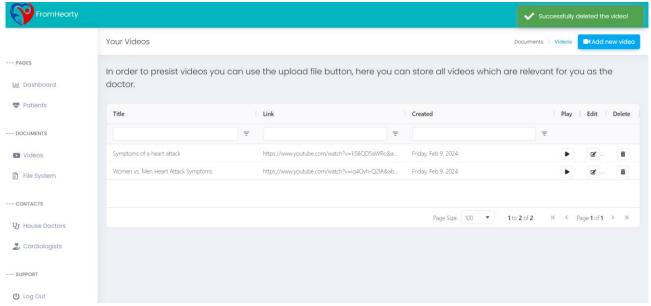
6.1.4. Delete the video

When selecting the desired video in the grid, clicking on the delete button opens a confirmation popup for deleting the video.



Confirmation popup for deleting the video

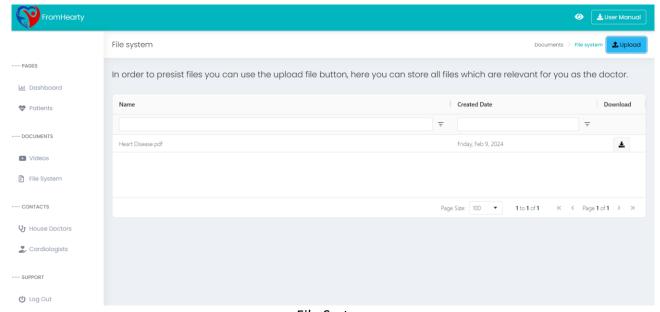
After successfully deleting the video, a success message is displayed.



Success message for deleting the video

6.2. File System

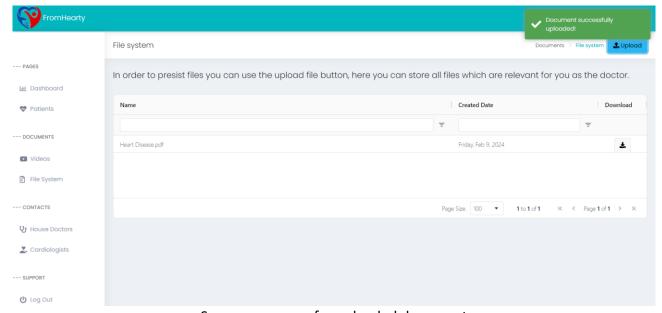
In the file system section of the application, house doctors and cardiologists can review relevant documents, upload new ones, or download existing ones.



File System

6.2.1. Document Upload

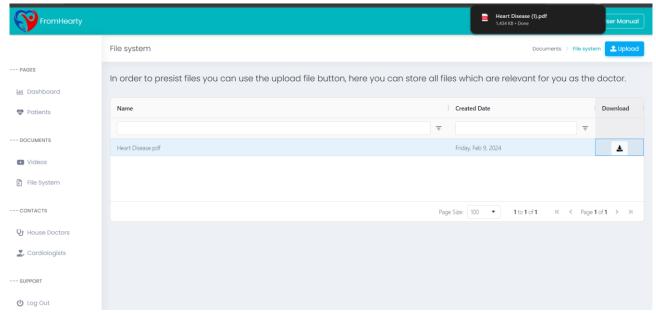
By clicking the 'Upload' button and selecting the desired document in .pdf, .docx, or .xlsx format from their device, the user can upload a new document to their file system. After uploading, the newly uploaded document is displayed in the grid, and a success message is shown for adding the new document.



Success message for uploaded document

6.2.2. Document Download

By selecting the desired document in the documents grid and clicking the download button, the document is downloaded to the device of the house doctor or cardiologist.

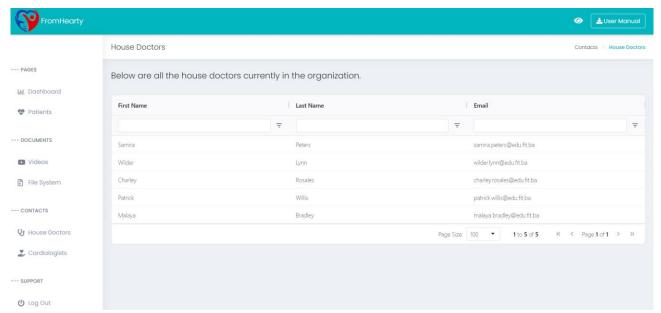


Download of the selected document

7. Contacts

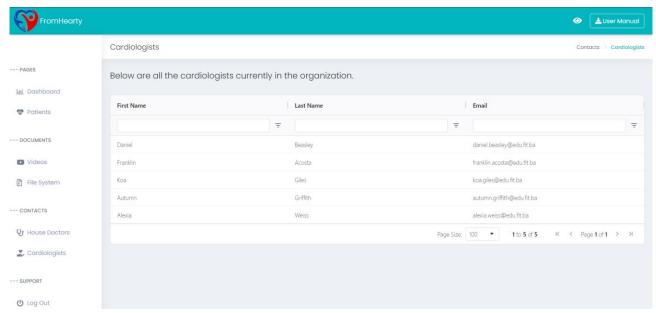
Contact information for home doctors and cardiologists within the application provides users with easy access to information about healthcare professionals. Users can search and review the contact details of all doctors.

7.1. House Doctors contact information



House Doctors contact information

7.2. Cardiologists contact information



Cardiologists contact information

8. Visibility Mode

This functionality provides specific adjustments in the application to enhance the user experience for individuals with visual impairments. By activating this option, users will notice the following changes:

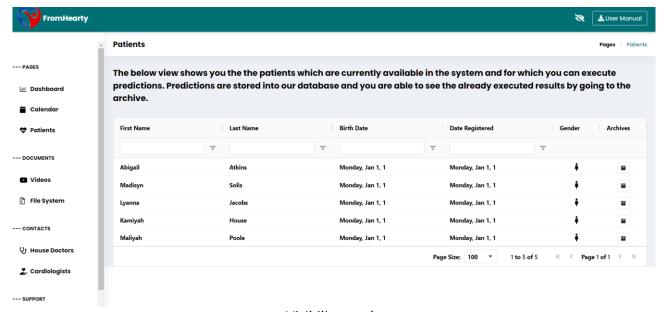
Font Enlargement:

All text within the application will automatically increase in size for easier readability. This assists users in seeing information on the screen more clearly.

Text Color:

The text color becomes deeper and sharper, facilitating better differentiation between text and background. This contributes to improved visibility and legibility.

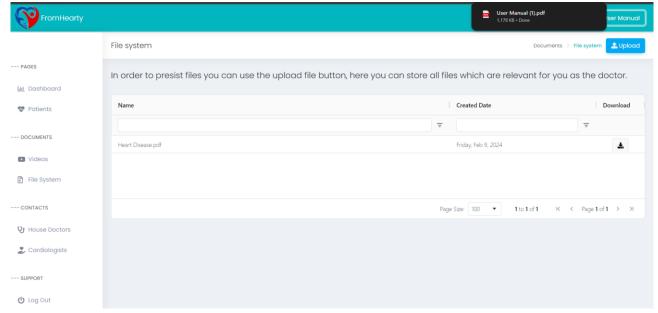
Visibility Mode can be activated or deactivated according to user preferences, offering a tailored experience that facilitates the use of the application for individuals with visual impairments. The option is located in the upper right corner of the screen .



Visibility mode

9. Download the User Manual

By clicking on the 'User Manual' button located in the top right corner of the screen, the user downloads this document for all necessary explanations and clarifications regarding the use of the application.



Download of the User Manual