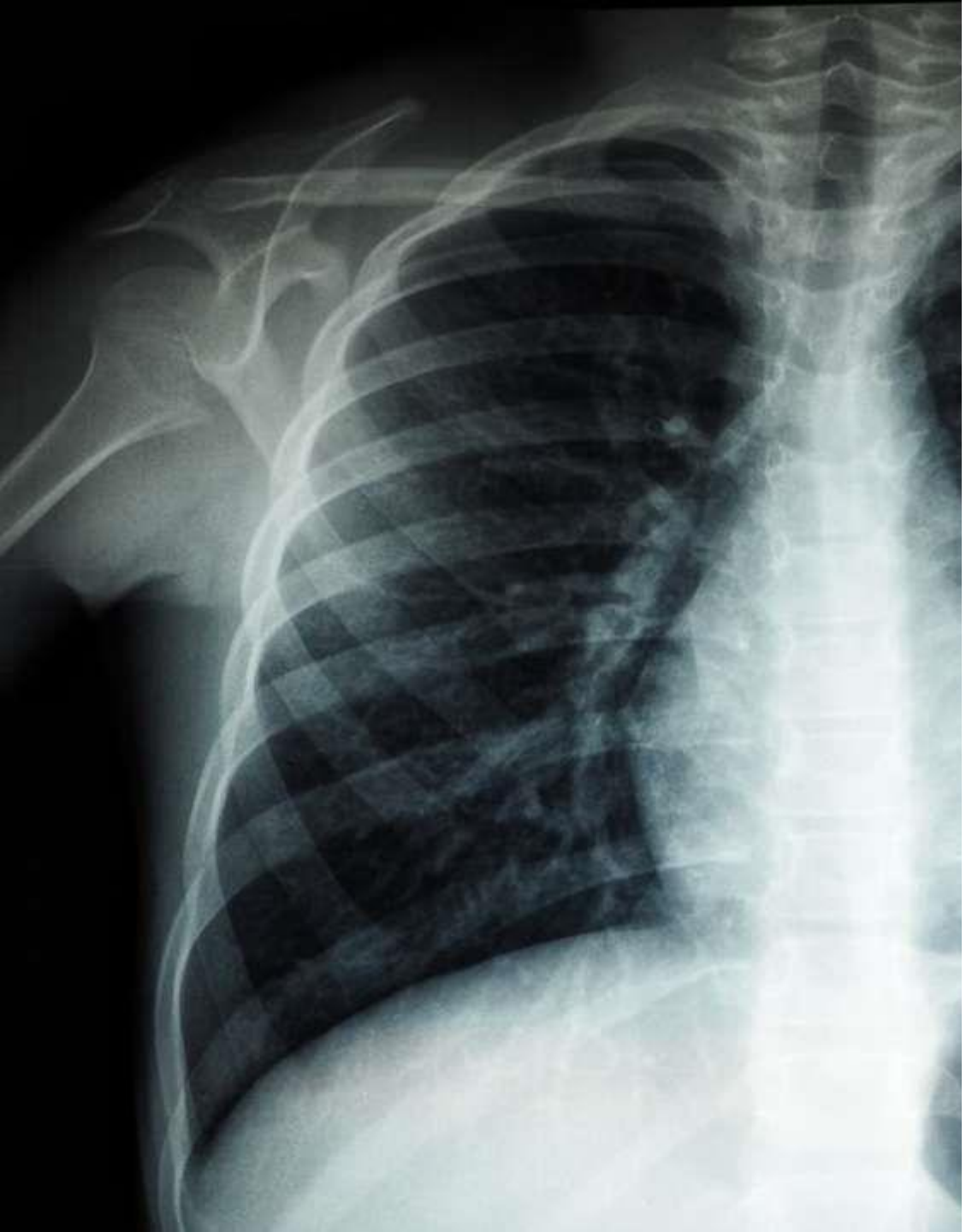


MED-X AI

Thorax Disease Detector

BY: Med-X (Team 1)
CS691
February 2024

MED-X AI

AGENDA:

01
Our Team:
- Member Names
- Roles and Responsibilities

02
Project Overview:
- Problem Statement
- Project Description
- Personas
- Product Idea

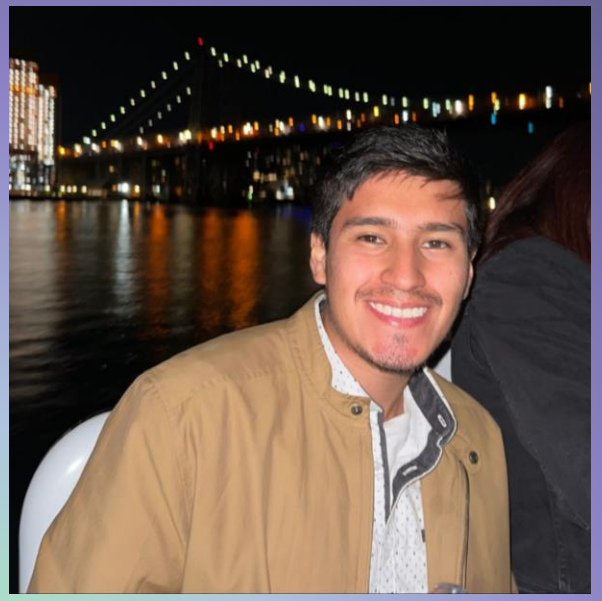
03
Languages and Tools:
- A list and explanation of technologies and algorithms used to complete the project

04
Team Logistics:
- Project Schedule
- Team Working Agreement

05
Retrospective:
- What went well
- What needs to be Improved
- Action Items

MED-X AI

Team Roles and Responsibilities



Ronaldo Simbaña
Scrum Master

Marla Capistran
Team Leader

Filippo Zallocco
Developer

MED-X AI

Team Roles and Responsibilities

Christopher Ospina
Developer

Anthony Muñoz
Quality Assurance / Tester

Leanna Machado
Developer

MED-X AI

Team Roles and Responsibilities

Rahul Nayanegali
Developer

Prithvi Raimangya
Product Designer / Developer

MED-X AI

Problem Statement

Currently, x-ray machines are widely available; however, clinical chest x-ray images can be challenging to read and diagnose. Furthermore, x-rays are not a priority for radiologists, as they tend to focus more on CT images and MRIs. CT scans are both harmful and expensive, in addition to being time consuming.

MED-X AI

Project Description

- A web app that has a highly trained deep learning model that classifies x-ray images, reducing the need for a radiologist to examine them
- Intended for medical professionals and patients who upload x-ray chest images
- Uses a deep-neural network model that will detect common chest health issues
- Our application will reduce the time it takes for a patient to receive their diagnosis using AI

MED-X AI

Patient Persona

Harold Castillo

Age: 55
Gender: Male
Occupation: Restaurant Owner
Location: Red Bank, NJ

Harold gets regular check-ups for a man his age but has trouble scheduling due to his job. It'd be great if he could just view his results and get an idea of what they mean and potential next steps without having to keep going in person.

Goals

- View reports/results online
- Able to connect with doctor about results online
- Simple site for ease of use

Challenges

- Making it to follow-ups for results
- Understanding the results, even after a consultation
- Time taken to receive results

Radiologist Persona

Sandro Cucciano

Age: 50
Gender: Male
Occupation: Radiologist
Location: Manhattan, NY
Hospital: NYU Langone Medical Center

Has been in the practice for 20 years. His team is understaffed and under equipped. Is often exhausted from reviewing x-rays and informing people they have a serious illness.

Goals

- Process chest images fast
- Help hospital tend to patients
- Improve workflow for his team

Challenges

- Increasing patient volumes
- Burnout from long shift and nature of the job
- Facility cutting funds
- Spends many hours reviewing x-rays

MED-X AI

Doctor Persona

Dr. Bryce Ruiz

Age: 34
Gender: Male
Occupation: Doctor
Location: Fresno, Ca
Hospital: Albuquerque Medical Center

A 34-year-old medical professional from Fresno. Has been working at Albuquerque for over 10 years and has recently been promoted to Cardiology to conduct x-rays

Goals

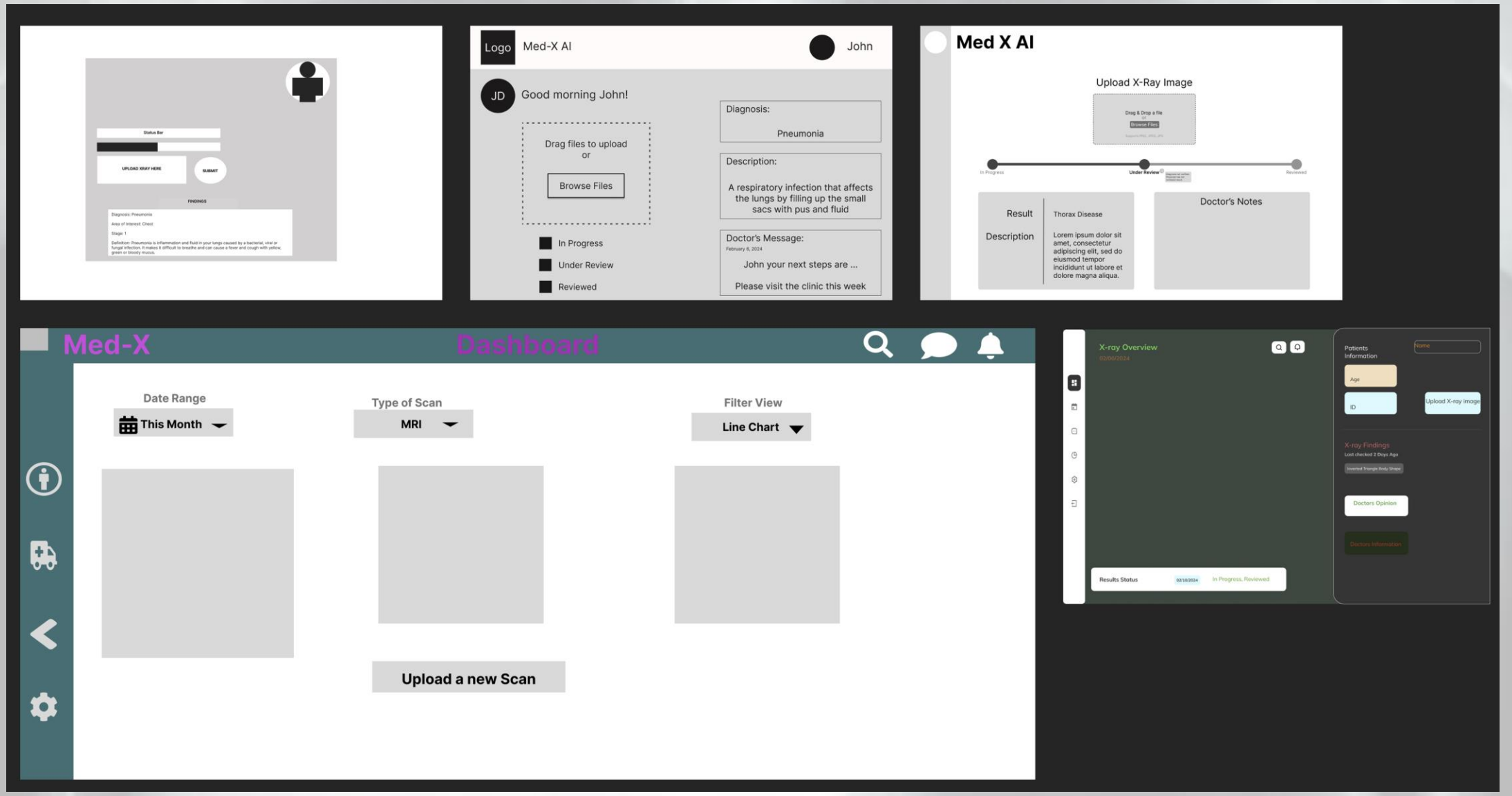
- Build a strong reputation with patients
- Explain to patients what they have in a clear manner

Challenges

- Large volume of patients
- Limited time for consultations
- Patients are often confused about their diagnosis

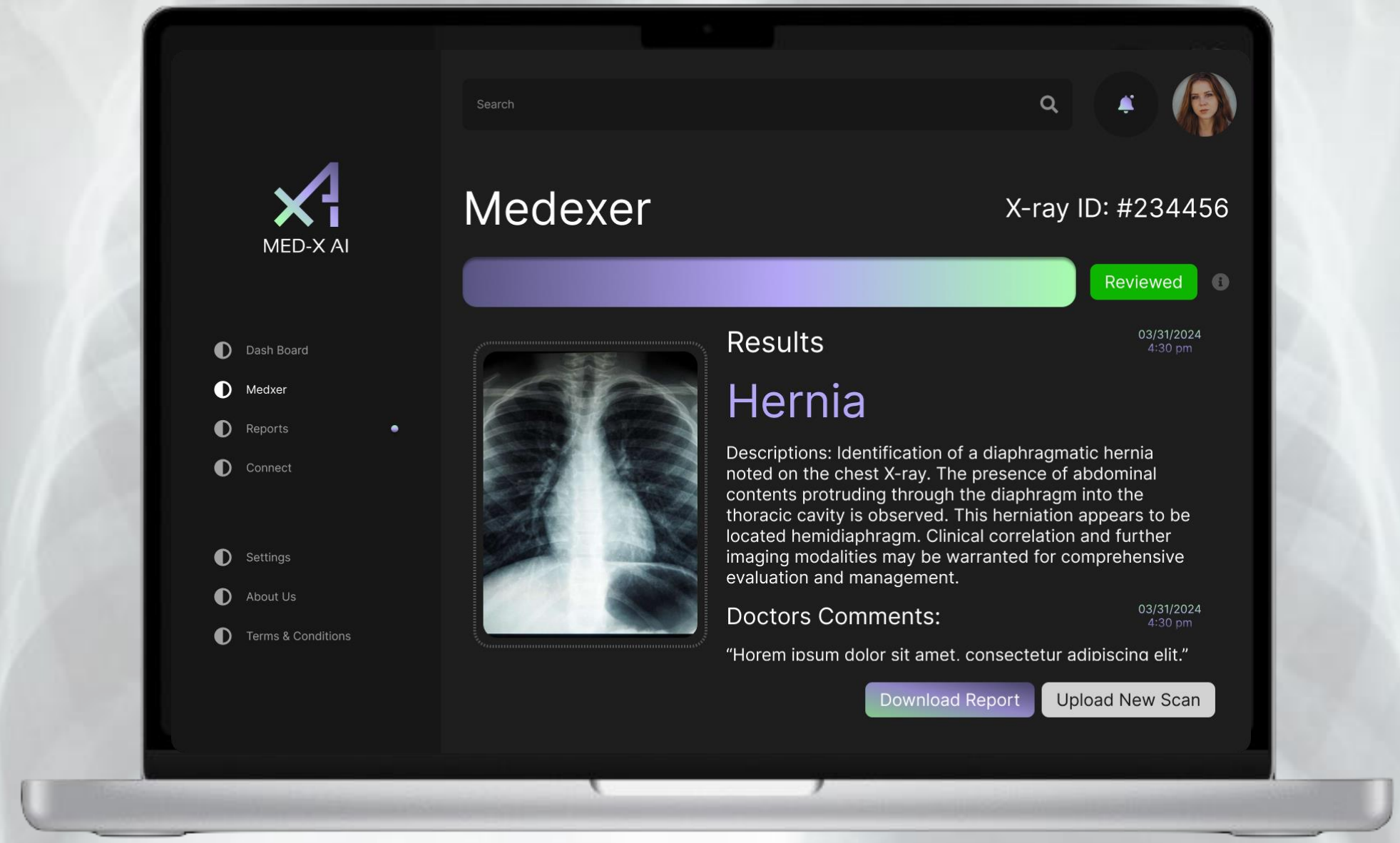
MED-X AI

Product Design Journey



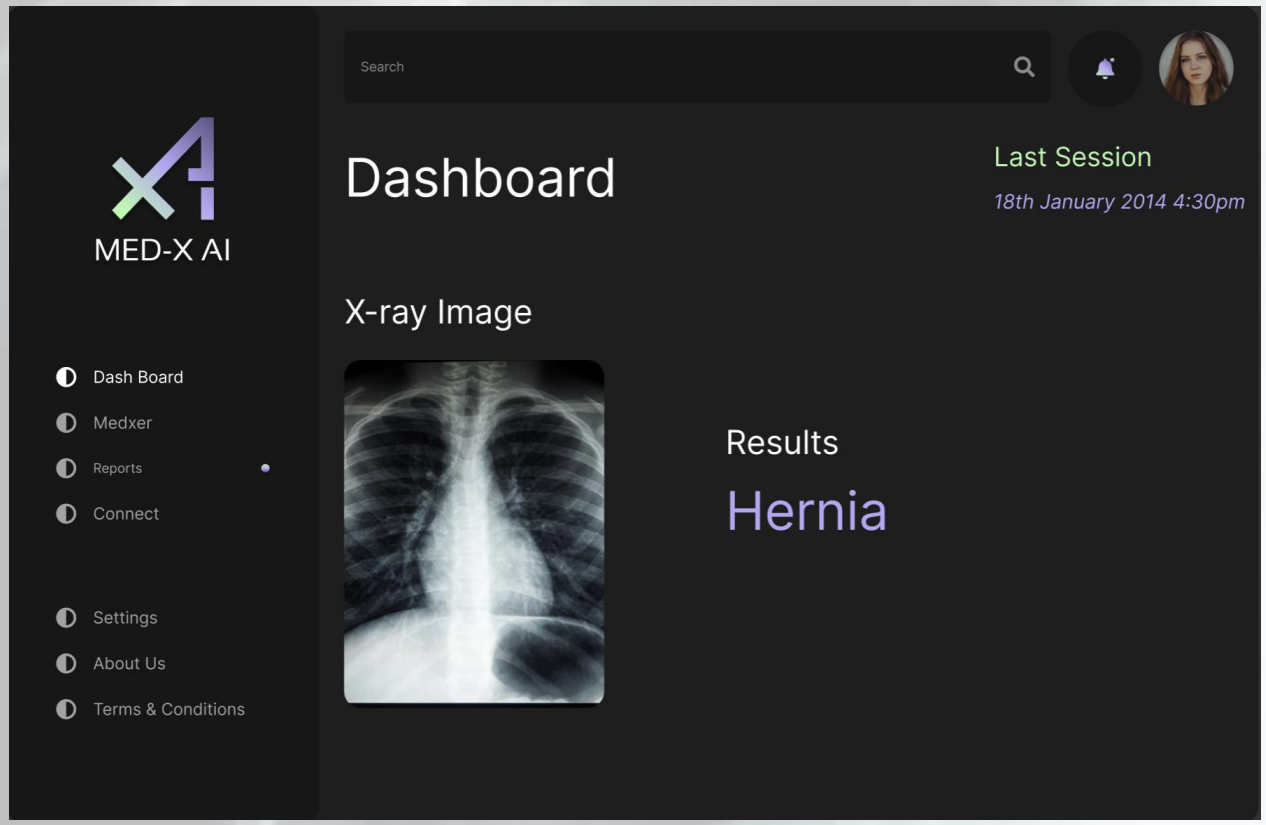
MED-X AI

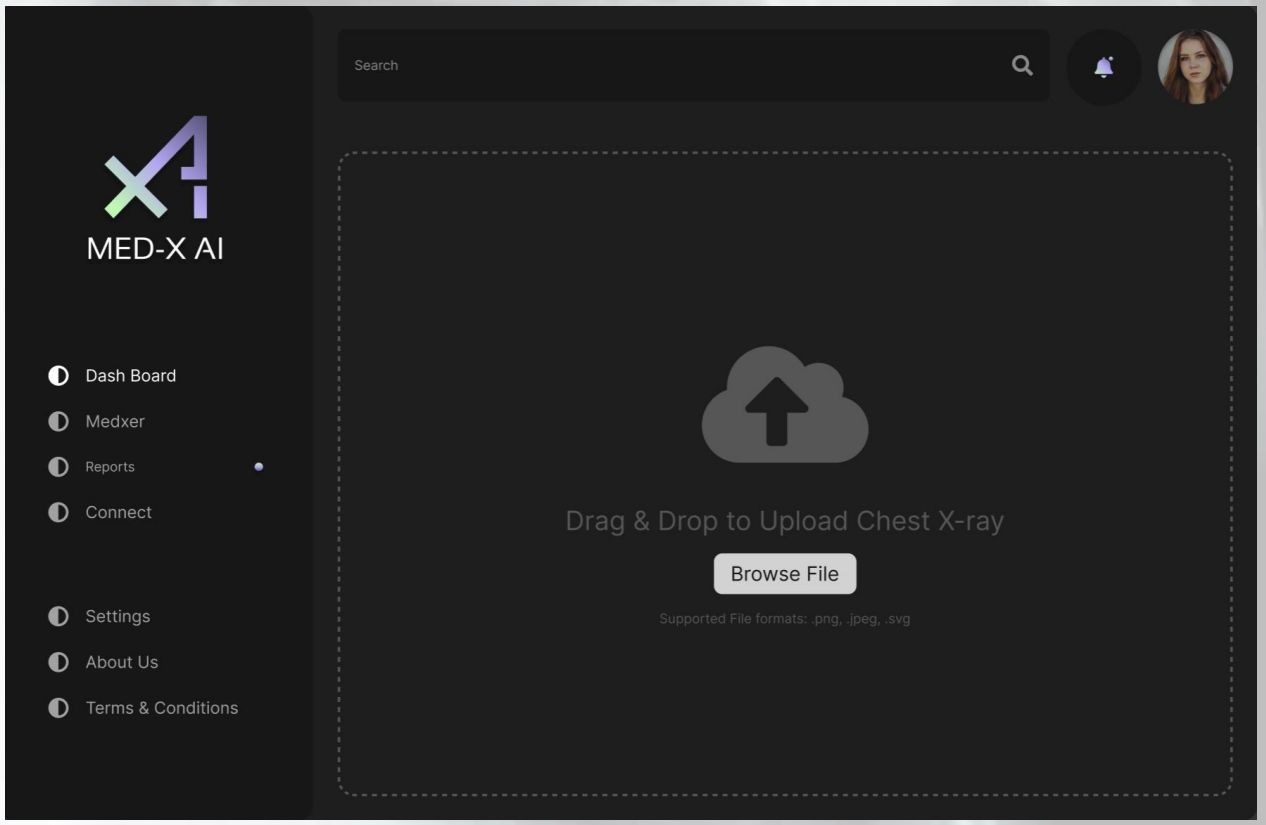
Final Product Design



MED-X AI

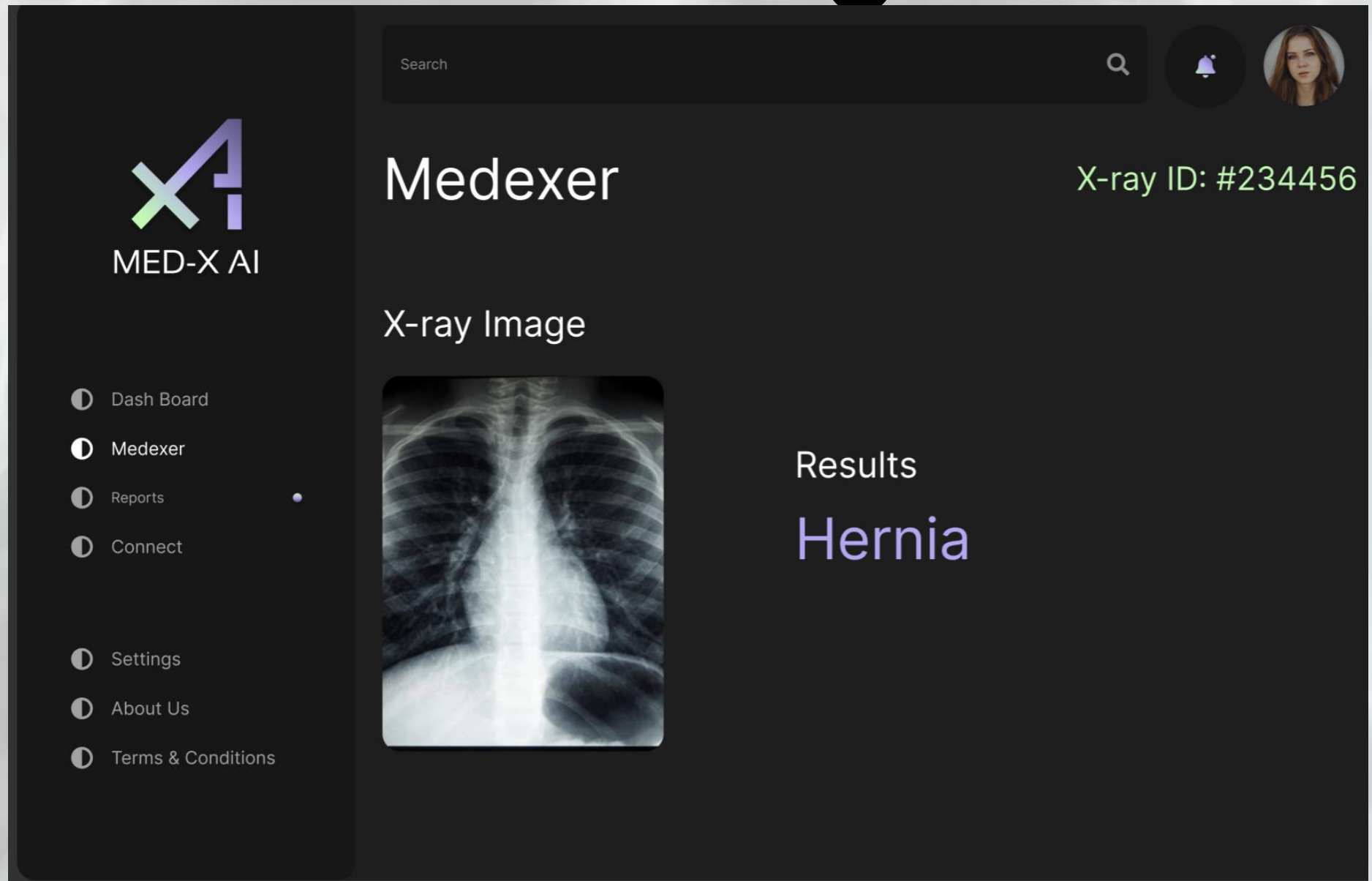
MVP Design





MED-X AI

MVP Design



MED-X AI

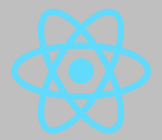
Technologies & Algorithms

Programming Languages and Frameworks

HTML5

CSS

JavaScript


React

NodeJS

NestJS

Python

Tailwind CSS

Algorithms

TensorFlow

CNN

Database

Firebase

AWS

Azure

Tools

Figma

VSCode

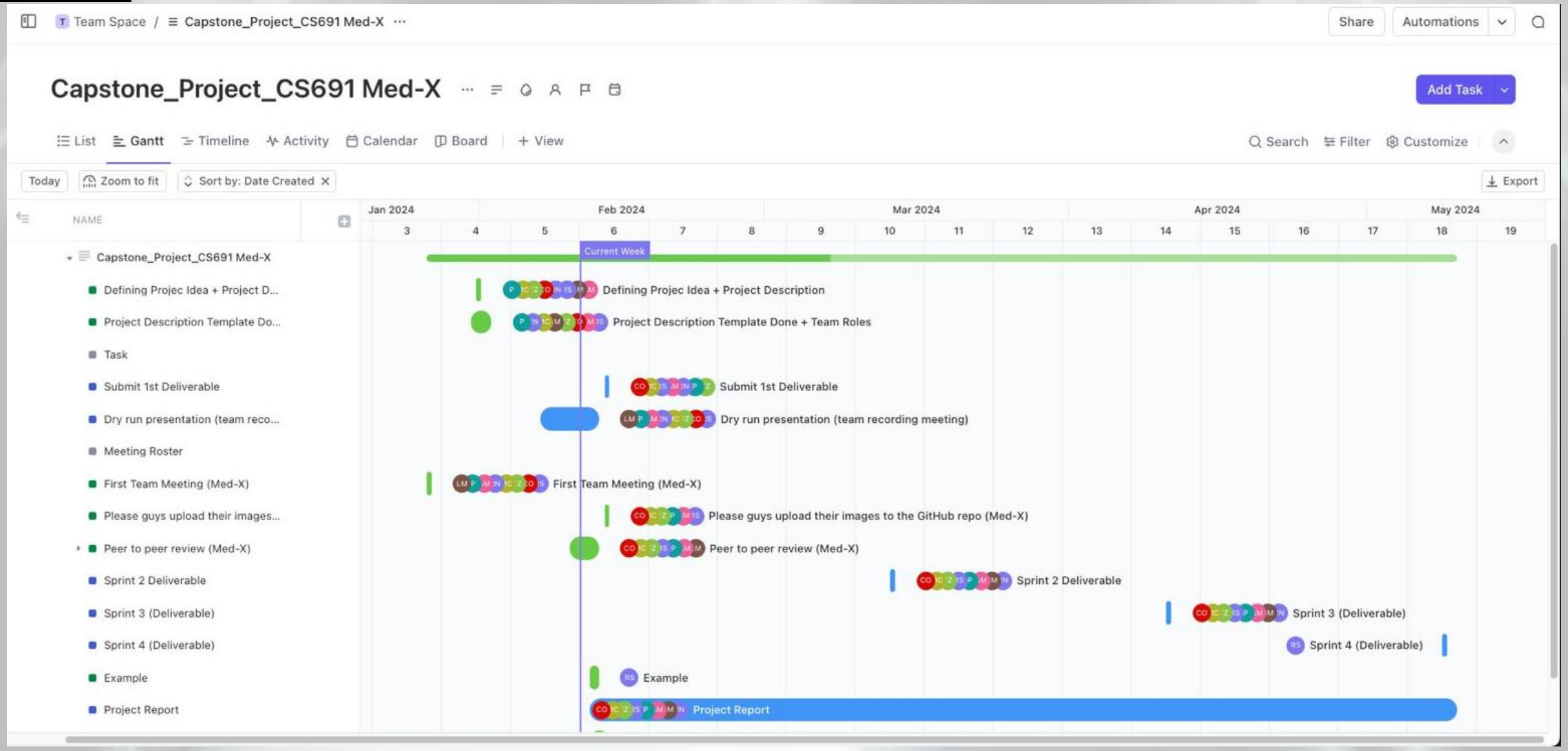
Docker

GitHub

Postman

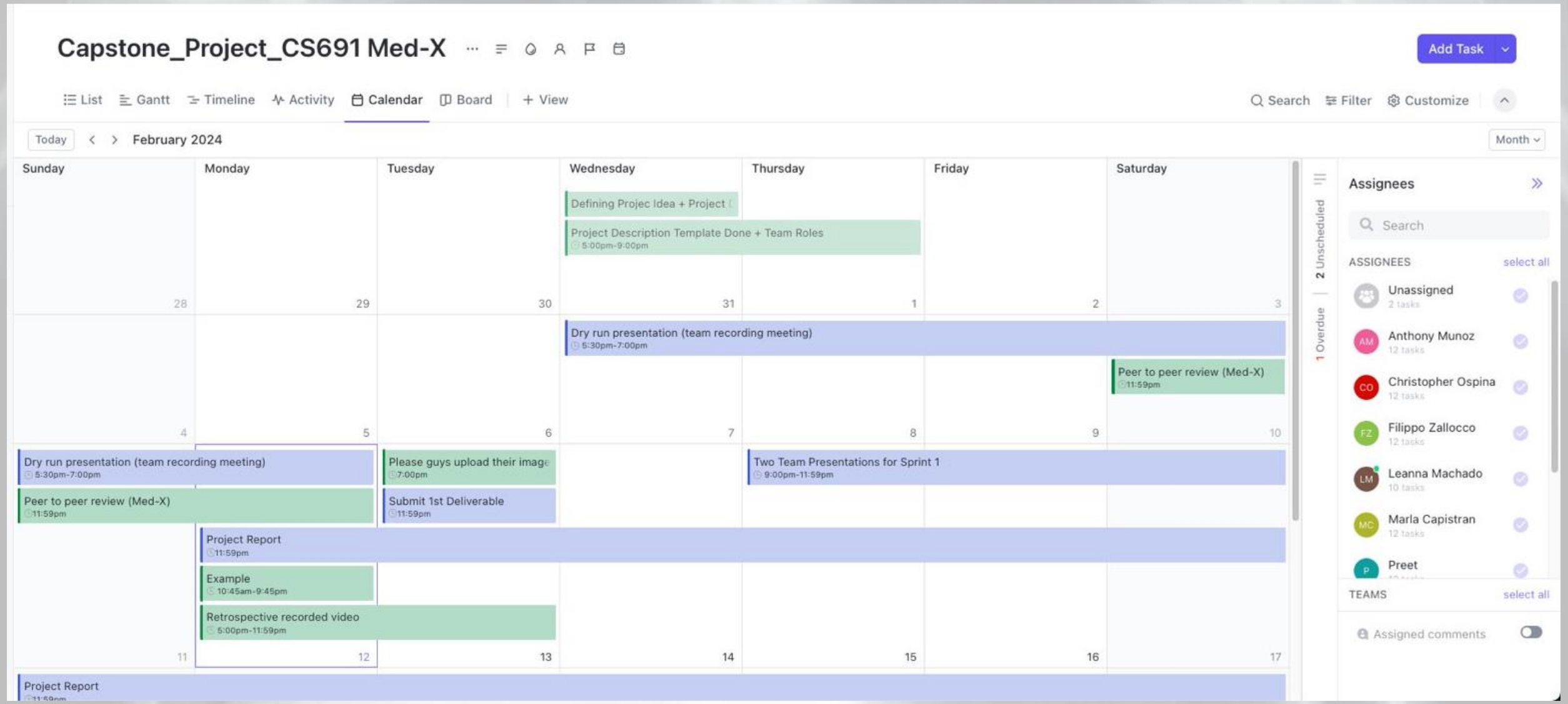
MED-X AI

Project Schedule



MED-X AI

Project Schedule



Team Working Agreement

MED-X AI

Team Working Agreement

To ensure the smooth and successful completion of the Computer Science Capstone Project, the Med-X team must comply with the following expectations. As a team, we will commit to being transparent and accountable with our project responsibilities, be honest and straightforward when it comes to project plans, timeline, and progress, be proactive in trying to foresee and avoid difficulties, take initiative in tasks where a member's skills are capable, prioritize the overall success of the project, and follow through to the end.

Terms of Agreement:

Communication

The team will communicate with each other through various methods. For weekly meetings for meaningful team discussions, zoom meetings will be used. All team members are encouraged to keep their cameras on in order to build trust between the team and reflect transparency.

Comments, questions, quick discussion, and emergencies are to be communicated through a Whatsapp messenger group chat.

To share the final deliverables, share resources, and take notes, Google Docs will be used where all the team members can edit the document. Files and other resources that are not suitable to be posted on Google Docs will be uploaded on OneDrive. This includes recordings of weekly team meetings, Microsoft Word documents and PowerPoints.

A platform called ClickUp will be used to keep track of tasks, assignment due dates, and scheduled meetings. Members are assigned to tasks, where the status can be changed to show progress and viewed as a timeline. This platform assists in project management efficiency.

In all discussions within the team, members are expected to actively listen, remain focused on the topic at hand, and utilize visuals to help with the conversation.

CS 691

Work Division and Participation

The entire project work should be divided into equal parts, and equal responsibilities should be given to all the team members. Members are expected to select and contribute to tasks in which their skills are best fit.

Each team member should complete their division of work before the class deadline and by the team's scheduled date. If work is unable to be completed on time, that hinders the performance of the entire team. In any case a team member is facing difficulty or issues with completing tasks, they are expected to share it with the team so that they can help each other and complete the work before the deadline.

All the team members are expected to attend the scheduled meetings promptly. All members should show respect, share feedback and suggestions, and share skills and knowledge that would assist in the progress of the project.

Absence during multiple meetings will affect the team's performance and efficiency. The team member can discuss beforehand with the team if he/she is going to miss the meeting. Meetings will be recorded, therefore members who miss a meeting are expected to watch the recording.

Work is divided between members of the group voluntarily. However, if members lack participation, the team leader is permitted to assign necessary tasks to absentee members.

Meetings

All the team members will meet on zoom virtually every week. Meetings will occur 3 times a week on Mondays, Wednesdays, and Fridays at 5 pm. Exact dates and times are verified in the previous meeting. This ensures flexibility to accommodate everyone's schedules and a greater likelihood that all members can attend. All the team members must be present, unless for exceptional cases that are communicated to the team.

The team leader would be responsible for initiating and monitoring project tasks and assignments. The scrum master is expected to lead and monitor sprints and daily scrums.

Team Working Agreement

CS 691

The status of tasks and meeting notes on ClickUp will be added and updated after every meeting to keep track of the project and its progress.

Every team member is expected to come up with ideas, participate in the discussion, and give an update on their progress for their part of the work.

In case a member is absent during a meeting, that member pledges to support whichever decision is approved during that meeting. They are also expected to watch the recording of the meeting and ask any questions to clarify what they have missed.

Respect

It is essential that all members have a chance to share their opinion and make any suggestions without judgment. The project is a team effort where all members work together, taking advantage of our collective knowledge to come up with solutions and confront problems that may arise. Data will be used to inform our decisions whenever possible.

All members agree to respect each other's personal schedules and listen to each other's perspectives with an open mind.

Team Member	Email
Marla Capistran	mc08144p@pace.edu
Leanna Machado	lm77202p@pace.edu
Anthony Munoz	am15943n@pace.edu
Rahul Nayanegali	rn06857n@pace.edu
Christopher Ospina	co05453n@pace.edu
Prithvi Raimangya	pr21243n@pace.edu
Ronaldo Simbana	rs77853p@pace.edu
Filippo Zallocco	fz46756n@pace.edu

MED-X AI

Retrospective:

Retrospective 1

What went well

Good attitude from everyone on the team +8	Actively communicating +6
Self organizing & cross-functioning team +5	We learned to communicate my concerns regarding project feasibility and development challenges +4
Regular meetings helped us dig deeper into the problems and challenges faced in interpreting and diagnosing X-rays and how a Deep Neural Net would make this diagnosis cheaper, accurate, and less time consuming +4	Strong collaboration and networking among team members +4
Respectfulness towards each other +4	Communication +3
Attending Meetings +3	The idea of a web application that classifies the chest X-rays into common thorax disease if exists was accepted by all the team members. +3
Helping each other when confused +3	Our progress was paced by quick decision-making and team agreement +3
Consistent and productive meetings enabled the the team to fast-track the project timeline and deliver the assignments on time +1	Understanding each other's priorities and managing them accordingly +1

What needs to be Improved

Reduce Length of Team Meetings +5	Overlap when speaking +4
Mangaging prescheduled conflicts +3	Structure (Outline) of Zoom meetings +3
updating tasks accordingly +3	Self Care +1
Check tasks on Clickup daily +1	My team should have spent more time researching the problem during the first weeks, so it would have had a clearer insight of the solution +1

Action Items

Have a set schedule (Agenda) +5	Setting Realistic / Manageable goals +4

MED-X AI

Retrospective:

What Went Well

- Good attitude from everyone on the team
- Actively communicating
- Self-organizing and cross-functioning team
- Regular meetings
- Respectfulness toward each other

What needs to be Improved

- Reduce the length of team meetings
- Overlap when speaking
- Have a structure (outline) for each Zoom meeting

Action Items

- Have a set schedule (Agenda)
- Setting Realistic/Manageable goals

Wikipage Link

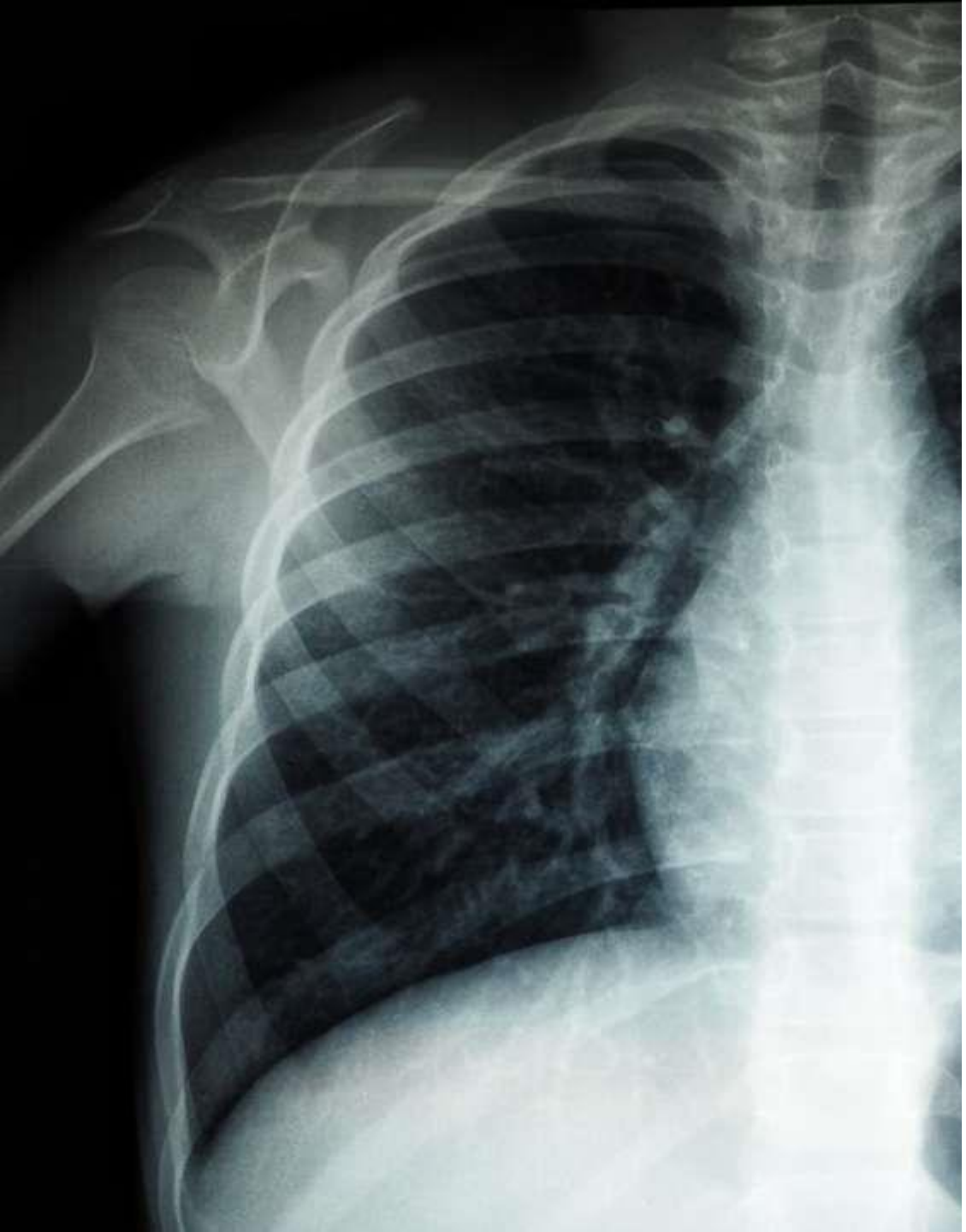
Med-X AI Wiki

Project Description

The Common Thorax Disease Detector, is a web app that has a highly trained deep-learning model that classifies x-ray images, reducing the need for a radiologist to examine them. It is for medical professionals and patients who upload x-ray chest images the Med-X AI app is an application that uses deep neural network models that will detect common chest health issues rather than having to wait for a radiologist to examine x-ray images that are not a priority for them our application will reduce the time it takes for a patient to receive their diagnosis by using AI.

The application uses neural network models that will detect common chest health issues, allowing radiologists to spend less time reading X-rays. This will reduce the time it takes for a patient to receive their diagnosis through the use of AI.

https://www.github.com/htmw/2024S-Med-X/wiki



Thank You For Listening