Transforming Healthcare Delivery with AI

Innovations in Medicine

Introduction

What We Aim to Solve

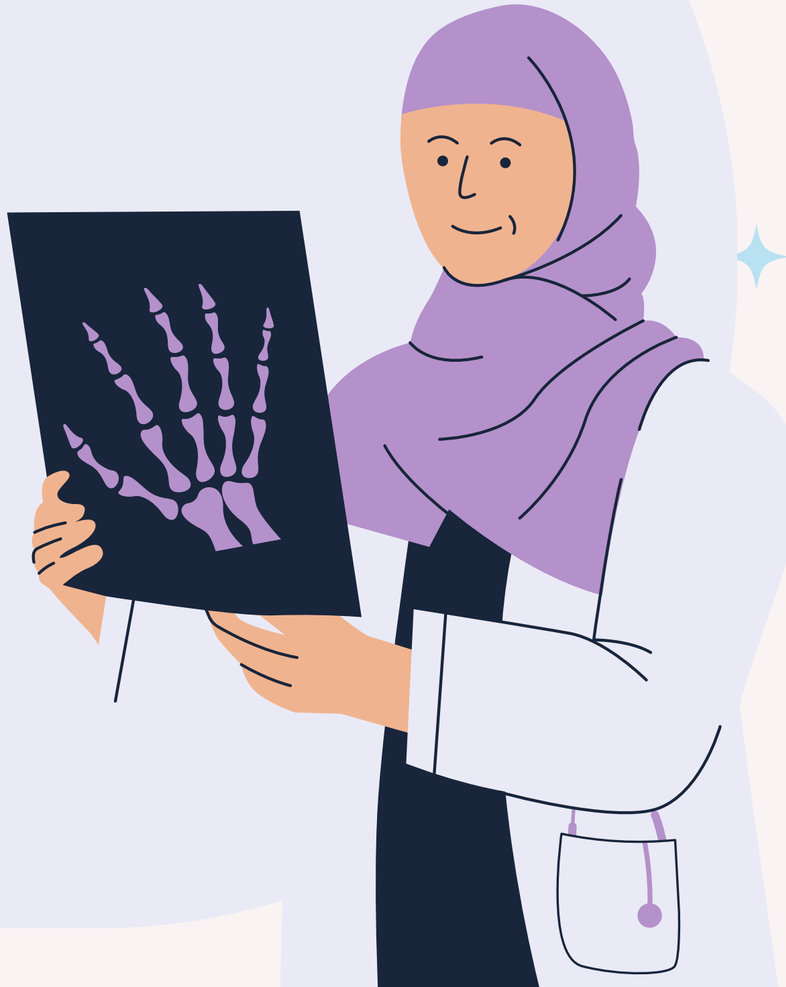
Leveraging AI to bridge the gap between patients, ambulances, and healthcare facilities to ensure timely and effective care.

Our Vision

To provide a seamless platform that identifies symptoms, guides patients during emergencies, and optimizes ambulance dispatch and hospital resource allocation

Why It Matters

Addressing delays and inefficiencies in healthcare can save lives and improve the quality of service for all stakeholders.



PROBLEM STATEMENT

The Current Challenges in Healthcare

- **Delays in Symptom Identification:** Patients often struggle to recognize critical symptoms early.
- **Lack of Immediate Guidance:** In emergencies, patients and families lack clear instructions or advice.
- **Panic During Emergencies:** Stress and confusion can delay decisions, worsening outcomes.
- **Inefficient Ambulance Dispatch:** Dispatch systems are often slow, leading to delayed arrivals and inadequate preparation for patient needs.
- **Resource Allocation in Hospitals:** Overburdened facilities and lack of real-time resource data hinder care quality.

How Our App Saves Lives: A Real-Life Scenario

A 45-year-old man suddenly experiences chest pain and shortness of breath at home.
His family panics and struggles to decide what to do.

Without the App:

- Family wastes precious time debating whether to drive to the hospital or call an ambulance.
- An ambulance eventually arrives, but it is not equipped for cardiac emergencies.
- The hospital is overcrowded, delaying immediate treatment.

With Our App:

- The patient’s symptoms are inputted into the app, which identifies a possible heart attack.
- The app provides real-time guidance for first aid to stabilize the patient.
- It locates and dispatches the nearest cardiac-equipped ambulance.
- The hospital is alerted in advance, preparing for the patient’s arrival.

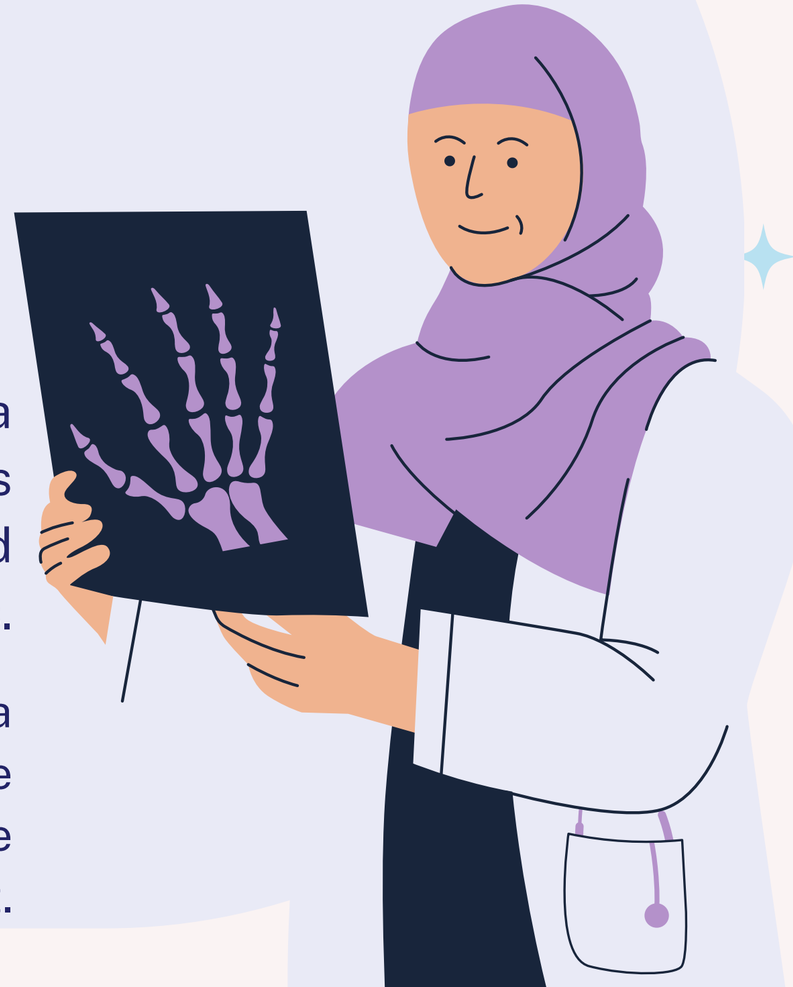
OBJECTIVES

Symptom Analysis and Severity Prediction: Build an AI-powered system that identifies symptoms, predicts disease severity, and provides personalized first-aid guidance and self-care recommendations.

Ambulance Optimization: Design an intelligent ambulance dispatch system that selects the best ambulance and optimizes routes based on patient location, condition severity, and resource requirements.

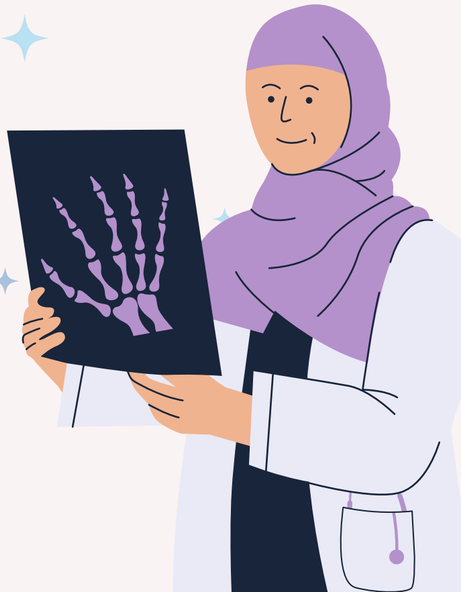
Predictive Bed and Resource Availability: Develop a recommendation engine that identifies nearby hospitals with real-time resource availability, proximity, and specialization for specific medical conditions.

Post-Care Analysis and Feedback Integration: Create a dynamic feedback-driven database to improve healthcare recommendations, symptom analysis, and hospital resource management.



Approach we plan to use

- Data Collection and Preprocessing: Gather symptom-disease datasets, encode symptoms, and normalize text for GPT-2 fine-tuning.
- Disease and Severity Prediction: Use decision trees and random forests for structured disease and severity classification.
- GPT-2 Fine-Tuning: Train GPT-2 on symptom-disease mappings to generate personalized first-aid and self-care guidance.
- Hybrid Integration: Combine tree-based models for predictions with GPT-2 for human-like advice generation.
- Ambulance Mapping: Integrate real-time ambulance tracking using APIs like Google Maps for location-based services.
- User Feedback Collection: Implement a chatbot form to gather feedback on services, first-aid guidance, and predictions.
- Sentiment Analysis: Analyze feedback using TextBlob, assign sentiment scores, and visualize insights with Matplotlib and Seaborn.
- Web Application Design: Build a responsive UI for symptom input, predictions, first aid, and ambulance service suggestions.
- Evaluation and Feedback: Continuously improve predictions, UI, and recommendations using feedback and model retraining.



Progress So Far

Ambulance System

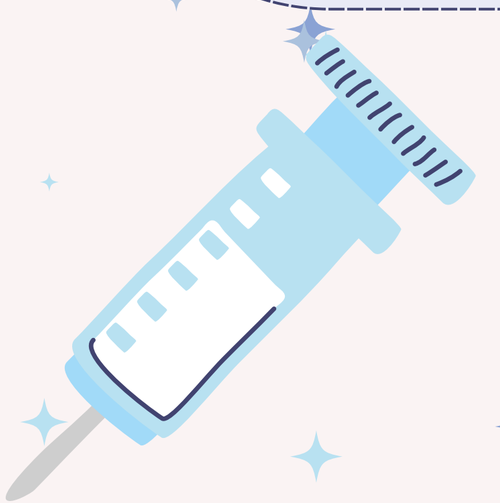
Uses real-time geolocation data to match the patient with the nearest and most suitable ambulance based on predicted disease,severity level,facilities available in the ambulance (e.g., cardiac support, ventilators).

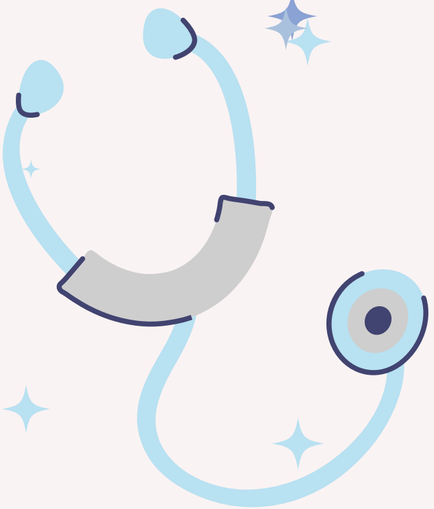
Patient Feedback

Created a chatbot form with a user-friendly interface which collects feedback from the patients on their experience.

Sentiment Analysis

The patient feedback is analysed using various python libraries like textblob and a specific sentiment score is assigned to each review.
The feedback is also visualized using matplotlib and seaborn.





What we plan to do next?

Disease Prediction & Severity Assessment

Using fine-tuned GPT-2, decision trees, and random forests, the system predicts potential diseases and their severity based on user-provided symptoms. Severity levels help prioritize user actions.

Self-Care & First Aid Guidance:

The AI provides personalized self-care recommendations and detailed first-aid steps to help users manage symptoms immediately, reducing dependency on instant medical advice.

Intuitive Web Application

The system is delivered through a user-friendly web application featuring an intuitive interface, ensuring seamless interaction for users to input symptoms, receive predictions, and access guidance.

Doctor Recommendation:

The system evaluates severity and guides users to seek medical attention if needed, recommending consulting a doctor based on predicted outcomes and severity levels.

Thank you for your attention