Pandemic Shield: AI-Powered Crisis Management

Team number: SAPP-1205
Team members: Krish (team leader),

Aryan Gupta, Kanishka Narang, Divakar Kumar

Maharaja Agrasen Institute of Technology, Indraprastha University

Problem Statement

The COVID-19 pandemic exposed critical gaps in managing public health crises, highlighting the need for effective solutions to address such challenges. Key issues include delayed symptom detection, insufficient tracking of infected individuals, lack of seamless communication with healthcare facilities, and limited access to accurate treatment information. These challenges lead to delayed interventions, increased infection rates, and overwhelmed healthcare systems. To tackle these problems, there is a need for a comprehensive, technology-driven approach that integrates AI for early detection, efficient contact tracing, streamlined hospital communication, and tailored treatment recommendations, ultimately improving both individual health outcomes and public health responses.

Description of idea

A public health monitoring system that crowdsources symptom data to detect potential disease outbreaks. Users input their symptoms, which are stored in a database along with their location. The system analyzes this data to identify patterns of common symptoms across users in specific geographical areas. When more than 50 users in the same area report similar symptoms, the system triggers a pandemic alert. It automatically notifies local healthcare facilities (both government and private) and provides their locations. The platform also offers preventive measures and safety guidelines to users in affected areas, helping contain potential outbreaks.

Solution

The system uses geolocation API to track user locations and implements a symptom-logging interface where users input their health data. A data analysis engine continuously processes the symptom database using clustering algorithms to identify patterns. When symptom clusters exceed the 50-user threshold in a geographic radius, the system triggers automated alerts via SMS/email APIs to registered healthcare facilities. The app integrates with mapping services to visualize affected areas and implements a content management system for sharing prevention guidelines.

Description of the Technology

- Basic AI model using python for symptoms tracking
- MERN stack for backend
- HTML CSS JS for frontend

Uses/Applicability

- Symptoms Checker
- Early Detection and Red Alerts
- Patient Location Tracker
- Contact Tracing
- Hospital Contact Functionality
- Treatment Methods and Precautions
- Educational Content

Applications of the Health Monitoring System

For Individual Users:

- Track personal health and symptoms.
- Receive real-time health alerts.
- Check health risks before traveling.

For Healthcare Providers:

- Anticipate and manage patient flow.
- Prepare resources based on trends.
- Focus on affected areas.

For Communities:

- Monitor school and workplace health trends.
- Plan events with health data in mind.
- Keep residents informed of local health conditions

For Public Health Officials:

- Monitor health trends in real-time.
- Communicate important updates.
- This system supports informed health decisions for individuals and institutions.