

PROJECT: ANANTA

Google Developer Student Clubs, SMVDU

DOCUMENTATION

- **Problem Statement** - M2T1 (Web based Solution)

Optimizing Doctor Availability and Appointment Allocation in Hospital through Digital Technology and AI Integration.

- **Description**

- To develop a digital system that streamlines the appointment scheduling process in hospitals by automating the process of identifying doctor availability and appointment slot allocation.
- The system will use Artificial Intelligence (AI) to allocate appointment slots based on the doctor's presence and the number of waitlisted patients. This will improve the overall patient experience by reducing the wait time.

- **Objective**

The proposed digital system will improve the efficiency and convenience of the appointment scheduling process in hospitals; the patients will benefit with reduced waiting time.

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1.Introduction

In healthcare, efficient appointment scheduling is crucial to ensure patients receive timely care while maximizing the utilization of doctor resources. This project proposes a digital solution that leverages advanced technologies to automate the process of identifying doctor availability and allocate appointment slots accordingly. The primary goal is to reduce patient wait time and improve the overall efficiency of the appointment scheduling process in hospitals.

2.Target Users and Needs

The target audience:

- Hospital administrators: They are responsible for the overall efficiency and effectiveness of the hospital, including the efficient use of resources and the provision of quality patient care.
- Clinicians: They are responsible for providing direct care to patients, and they are often frustrated by the long wait times and inefficient scheduling systems that can prevent them from seeing their patients in a timely manner.
- Patients: They are the ultimate beneficiaries of any improvement to the doctor availability and appointment allocation system. They want to be able to see their doctor when they need to, and they don't want to have to wait long periods of time for an appointment.

The needs include:

- Improved access to care: Patients should be able to get an appointment with their doctor when they need it, without having to wait for weeks or months.
- Reduced wait times: Patients should not have to wait long periods of time in the waiting room before seeing their doctor.
- Improved efficiency: The doctor availability and appointment allocation system should be efficient, so that clinicians can spend more time with their patients and less time on administrative tasks.
- Reduced costs: The doctor availability and appointment allocation system should be cost-effective, so that hospitals can save money and reinvest those resources in other areas.

3. Features

User Dashboard

- Disease Selection: User can select specific disease (e.g., Fever, Skin, Eye etc.) to find a relevant doctor.
- Doctor Availability: A list of doctors specializing in the selected disease is displayed, marked in green (available) or red (unavailable) based on their current status.
- Slot Description: Users can view detailed slot information for each doctor, including availability and description of available slots.
- Sorting Option: Doctors can be sorted based on appointment time or fees, allowing patients to choose the most convenient option.
- Booking and Registration: When a patient selects a doctor and appointment time, login / registration popup appears for user authentication.
- Time and Fee Adjustments: Booking time intervals are customizable (e.g., 5 or 10 minutes), with fees adjusted accordingly.

Doctor's Attendance

- Manual Attendance: Doctors or their staff have the option to manually mark their attendance using a separate dashboard.
- Face Detection: Alternatively, a face detection system at the entrance can automate entry and exit tracking, ensuring real-time doctor Availability updates.

4. Technology Stack

AWS

- Amazon Rekognition: Used for face detection and recognition.
- EC2 Instance: Provides scalable and secure hosting
- S3 Bucket: Used for data storage and retrieval.

Generative AI

- AI Algorithms are used to predict doctor availability, helping optimize appointment.

Web

- HTML, CSS (Tailwind CSS), JavaScript: Frontend development for the user

interface.

- Django, SQL: Backend development for managing user data, appointment, and doctor attendance.

5. Usage

- Visit the website and use the user dashboard to find doctors based on disease, availability, and fees.
- Doctors can log in to mark their attendance manually or use the face detection system for automatic attendance tracking.

6. AI Integration

- AI plays a crucial role in predicting doctor availability. By analyzing historical data and real-time inputs, the system can allocate appointment slots efficiently, considering factors like doctor availability and patient preferences.
- The AI model is continuously refined based on feedback and data analysis, ensuring improved scheduling accuracy over time.

7. Contributors

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