Swasthify
by
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"Bridging Distances, Enhancing Care —Empowering Health with AI, IoT, and Virtual Connectivity"

Overview

With the global rise in chronic diseases and limited access to healthcare, there is an urgent need for innovative solutions that make healthcare more efficient and accessible. chronic diseases like heart disease, cancer, and diabetes account for 71% of global deaths, according to the World Health Organization (WHO). Additionally, nearly half of the world's population lacks access to essential health services, particularly in rural areas where there is a 45% shortage of healthcare professionals.

Rural patients often travel long distances to receive basic medical care, facing challenges such as poor infrastructure and high transportation costs. In urban areas, overcrowded hospitals and long wait times lead to underserved patients, despite the availability of healthcare facilities. Rural and urban patients experience travel hassles, delays in diagnosis, and gaps in continuity of care.

Technology offers a promising solution through Artificial Intelligence (AI), the Internet of Things (IoT), and virtual healthcare platforms. These innovations can reduce the strain on healthcare systems by enabling early diagnosis, personalized treatment, and real-time medication management. Our platform bridges the gap between patients and doctors, especially in underserved regions, reducing the burden of travel and improving access to quality healthcare.

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Problem Statement

Develop a comprehensive AI-powered virtual healthcare platform that connects patients from both rural and urban areas to qualified doctors through virtual consultations, addressing the shortage of healthcare professionals and minimizing travel barriers. The platform should provide AI-assisted diagnostics for early detection of diseases like heart disease, skin cancer, and diabetes etc. offer digital prescription management, and integrate an IoT-powered pill dispenser for automatic medication dispensing. Additionally, include a secure payment system and an AI-driven medical chatbot to offer real-time health advice and guidance.

02

Idea/ Solution

Doctor-Patient Appointment Management System:
The platform allows patients to browse and filter doctors based on their specialties, book appointments, and manage their schedules. The system automatically synchronizes with Google Calendar and includes options to schedule Zoom or Google Meet consultations, ensuring seamless access to medical professionals.

Automated Pill Dispenser:
An IoT-enabled pill dispenser is integrated into the system to automatically dispense medications according to the prescriptions provided by doctors. This feature enhances medication adherence and ensures that patients receive their medications at the right times without the risk of errors.

Symptom-based Disease Detection System:
The platform incorporates AI models for symptom-based disease detection, enabling patients to input symptoms and receive preliminary assessments. This feature aids in early diagnosis and ensures timely intervention, particularly for chronic conditions like heart disease and diabetes.

Dr. MediBot (AI Chatbot):
Dr. MediBot is an AI-chatbot which provides real-time medical advice and health recommendations based on user queries. The AI chatbot assists with symptom checks, general health inquiries, and guidance on whether a consultation with a doctor is necessary.

Personalized Healthcare Tips Recommendations:
Leveraging AI, the platform offers personalized health tips and recommendations based on patients' medical histories, symptoms, and preferences. This feature empowers patients to take proactive steps in managing their health.

Prescription Summarization System:
After a consultation, doctors can easily add prescriptions to the patient's profile, which the system summarizes for clarity. Patients can view, download, and manage their prescriptions digitally, making it easier to understand their treatment plans.

Idea/ Solution

Centralized Database and User Dashboards:
The solution includes a centralized MongoDB database that securely stores all patient and doctor information. Patients and doctors have separate dashboards for managing appointments, prescriptions, and profiles. The Admin Dashboard allows for oversight and management of all accounts and transactions.

Drug Recommendation & Duration of Treatment:
Our platform also includes AI Models that recommend optimal drugs and estimate the required treatment duration. These tools, available on the doctor's dashboard, assist in personalizing treatment plans, ensuring more effective and timely care for patients.

Mini-Escrow System:
It enhances trust between patients and doctors by holding payments securely until the completion of the consultation. This ensures that both parties are protected and that payments are only released once services have been delivered and verified. It adds an extra layer of security and transparency to the transaction process.

Specific Disease Prediction Models:
They analyze patient EHRs to provide accurate disease predictions. These AI-driven models assist doctors by offering predictive analytics, helping them make informed diagnoses and treatment decisions. Each model is tailored for specific diseases and is integrated within the patient's health records for streamlined use. Additionally, doctors have direct access to these models on their dashboard, allowing them to independently run predictions and generate insights for more personalized patient care.

Features

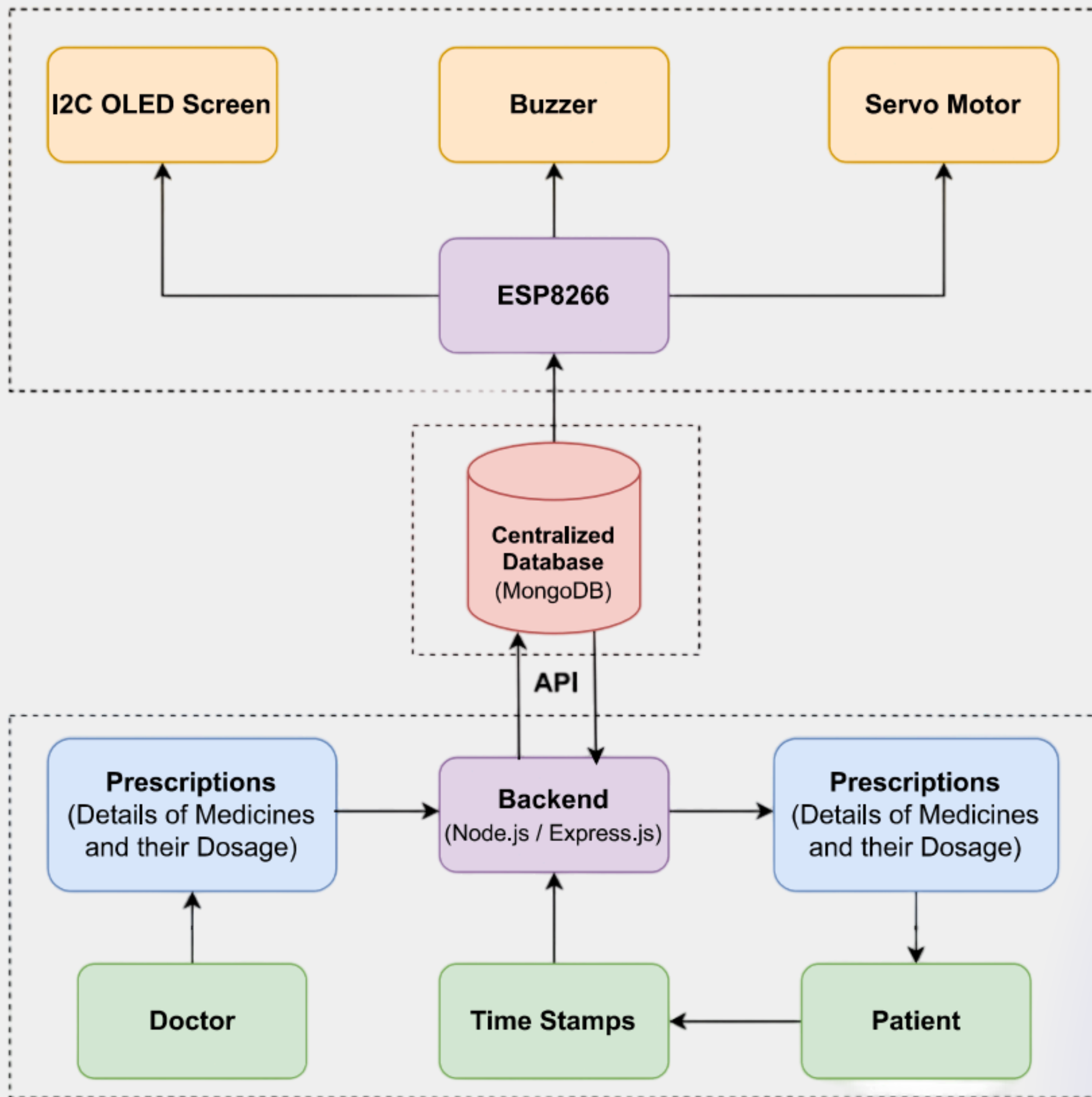- Doctor-Patient Appointment Management System
- IOT-based Automated Pill Dispenser
- Symptom-based Disease Detection System
- AI Chatbot (Dr. MediBot)
- Personalized Healthcare Recommendations
- Prescription Summarization System (PrescriptIQ)
- Specific Disease Detection Models
- Centralized Database and User Dashboards
- Mini-Escrow System for Secured Payments
- Drug Recommendation and Duration of Treatment

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Web Architecture

Centralized Database (MongoDB)

API

Admin Dashboard
View all Doctors
Handle Virtual Accounts
Payout Requests
Payout Disbursement

External API
Google OAuth 2.0
Google Meet
Google Calender
Zoom Meeting
Cloudinary (Images & Media)
Cashfree Payment Gateway
Cashfree Payouts

Middlewares (Authentication & Logging)

Pending Appointment Requests
Accept/Reject Requests
Upcoming Appointments
Schedule Zoom or Google Meet and
Add to Google Calendar
View Balance (Virtual Account)
Request for Payout
Update Profile

Backend (Node.js / Express.js)

View all Doctors (Filtering)
Book Appointments
Pending Appointment Requests
Accepted Appointment Requests
Pay to Confirm
Upcoming Appointments
Zoom or Google Meet Link
Download Prescriptions with Summary
Feedback (Rating and Review)
Update Profile

Add Prescription
Dr. MediBot (AI Chatbot)
Specific Disease Prediction

Flask API (Python)

Submit Medical Reports
Dr. Medibot (AI Chatbot)
Symptom-based Disease Detection
Health Tips Recommendation

AI Models

Doctor Dashboard

Login & Signup

Patient Dashboard

Landing Page
About
Features
Contact Us
Blogs

06

Tech stack

Frontend:
- HTML/CSS
- TailwindCSS & ChakraUI
- MaterialUI & Shadcn
- Accertinity & Spline for 3D
- Framer Motion
- JavaScript
- React

Backend:
- Node.js
- Express.js
- Flask (Python)

Authentication & Security:
- JSON Web Tokens
- Google OAuth 2.0

Machine Learning / AI:
- Python
- TensorFlow
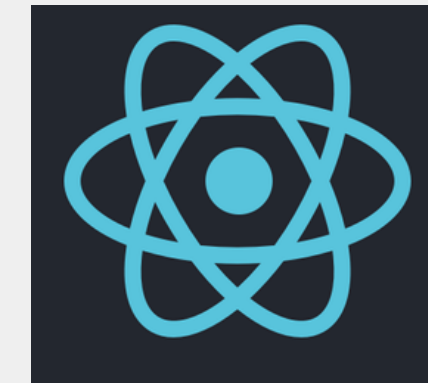- Jupyter Notebook
- LLaMA

Database:
- MongoDB

IoT / Hardware:
- Arduino UNO
- ESP8266
- Servo Motor

External APIs
- Cloudinary
- Google Meet
- Google Calendar
- NMCI API

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01

Advanced AI Models:
Add more AI models for diagnosing a wider range of diseases, making the platform a comprehensive diagnostic tool.

02

Wearable Device Integration:
Sync wearable health devices to monitor real-time health metrics for personalized care and automated doctor alerts.

03

Global Telehealth Expansion:
Offer multi-language support and expand virtual consultations globally to provide access to specialized doctors worldwide.

04

Online Pharmacy & Lab Test Bookings:
Enable users to order medicines online and book home lab tests directly through the website for added convenience.

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Future Scope

Thank You!