

# Medguide Project

## Overview

**MedGuide** is an AI-powered mobile application designed to simplify the medication selection process and support users through their recovery journey. It eliminates the confusion of pharmacy aisles and replaces uncertainty with data-driven confidence. The app acts as a personal health assistant — allowing users to log symptoms, receive tailored over-the-counter medication recommendations, and manage reminders through an integrated calendar system.

Our goal was to build a platform that blends artificial intelligence, usability, and accessibility to empower users to make informed healthcare decisions without the frustration of manual research.

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## Problem Statement

Many individuals experience uncertainty when choosing appropriate medications for mild illnesses. Over-the-counter options often vary in dosage, ingredients, and efficacy, creating confusion and the potential for misuse. MedGuide addresses this challenge by providing a **personalized, AI-driven solution** that guides users to suitable medicines, dosage schedules, and nearby pharmacy availability — all within a single, user-friendly interface.

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## Proposed Solution

The **MedGuide app** follows a streamlined, research-backed workflow:

1. **Symptom Survey:**

Users complete a brief, step-by-step survey describing their symptoms (e.g., cough, headache, fever, congestion).

2. **AI Recommendation Engine:**

A deep learning model processes survey inputs, cross-referencing symptom clusters, severity, user demographics, and medical data to suggest the most effective over-the-counter medication.

3. **Personalized Calendar & Tracking:**

The app automatically generates a daily medication calendar and sends **push notifications** to remind users of each dose. Users can log when they've taken a medication, enabling adherence tracking and historical review.

4. **Pharmacy Inventory & Pricing:**  
Using the **Google Maps API** and web scraping, the system identifies nearby pharmacies, checks stock availability, and provides real-time price comparisons for recommended medications.
5. **Safety Layer:**  
A **Drug Interaction Checker** verifies whether the suggested medication conflicts with existing prescriptions or allergies. A disclaimer ensures users understand that MedGuide is an informational tool — not a substitute for professional medical care.
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**Model Training and Data Collection**

At the heart of MedGuide is a deep neural network that maps user symptoms to optimal medication recommendations.

**Data Sources & Training Approach:**

- Publicly available healthcare datasets, medical journals, and de-identified clinical data.
- Symptom clusters, severity levels, demographics (age, weight, etc.), contraindications, and side effects.
- The model evaluates both drug effectiveness and user safety, providing a reliable medication match.

**Model Framework:**

- Developed as a **Python-based microservice** using **TensorFlow/PyTorch**, hosted separately for modularity and speed.
  - Connected via **Express.js REST APIs** to deliver real-time medication recommendations.
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**Tech Stack**

Layer	Technology	Purpose
Frontend	React Native	Cross-platform mobile app (iOS & Android)

Layer	Technology	Purpose
Backend	Node.js + Express.js	API routing, data storage, and authentication
Database	MongoDB	Storing user profiles, survey data, and medication logs
AI Microservice	Python (TensorFlow/PyTorch)	Deep learning model for medication recommendations
Mapping & Data	Google Maps API, Web Scraping	Locating nearby pharmacies and price comparisons

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### Core Features

- **User Authentication** — Secure login system for storing health data safely.
  - **Symptom Survey** — Intuitive, step-by-step interface for symptom entry.
  - **AI Model Prediction** — Generates personalized medication and dosage schedule.
  - **Interactive Calendar** — Auto-schedules reminders with push notifications.
  - **Medication Tracking** — Users can log medication intake and monitor adherence.
  - **Data Visualization** — Charts show symptom trends and medication history.
  - **Drug Interaction Checker** — Prevents harmful medication combinations.
  - **Pharmacy Finder** — Lists nearby pharmacies with real-time pricing.
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### Roles and Responsibilities

- **Frontend Developers (Aditi, Ira, Sreyasri):**  
Designed and built the React Native interface, implemented form components, and integrated calendar and notifications features.
- **Backend Developers (Vaishnavi, Ira, Nida):**  
Developed the Express.js API, managed MongoDB schema, and handled authentication and data flow.

- **AI/ML Engineers (Vaishnavi, Pranay):**

Trained and deployed the deep learning model, ensuring accurate medication matching and safe interaction filtering.

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## Outcomes

- Created a fully functional prototype demonstrating **end-to-end AI-driven medication recommendations**.
  - Improved user experience by eliminating confusion during self-medication decisions.
  - Integrated advanced safety checks and adherence tracking for higher trust and engagement.
  - Delivered a 7-minute live demo featuring a working survey, AI output, and notification flow.
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## Tools & Frameworks

React Native, Express.js, Node.js, MongoDB, TensorFlow/PyTorch, Google Maps API, Figma, Canva, Postman