Project Title: AmarShashtho

An AI-Based Medical Assistant for Health Q&A and

Doctor Recommendation

Group Number : 06

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Project Proposal: AmarShashtho

Objective of the Project

The objective of **AmarShashtho** is to develop a user-friendly web application that provides:

1. **AI-based medical question answering** using the **Med-Gemma** model via **LM Studio**.

2. The ability to **analyze medical documents or images** to determine what type of specialist is required.

3. A **doctor recommendation engine** that first searches a **local database** of doctors, and if no match is found, uses **Google Maps** to locate nearby specialists based on the user's location.

4. A **seamless experience** using a simple **HTML/CSS/JS frontend** powered by a **Flask backend** and **SQLite database**.

The app empowers users to get medical insights and specialist suggestions with minimal friction, making healthcare more accessible and intelligent.

Rationale of the Project

Many individuals, especially in semi-urban and rural areas, struggle with:

- Understanding **complex medical reports**.

- Knowing **which type of doctor** to consult.

- **Accessing relevant healthcare providers** efficiently.

AmarShashtho addresses these issues by:

- Acting as a **first-level AI medical assistant**.
- **Interpreting medical language and documents** using state-of-the-art medical LLMs (like Med-Gemma).

- Connecting users to **nearby relevant specialists**, streamlining the path from symptoms to treatment.

This solution democratizes access to reliable medical information and shortens the time it takes for a user to get professional help.

Stakeholders

Primary Stakeholders:

- **End Users (Patients):** Anyone seeking clarity on health issues or appropriate medical referrals.

- **Healthcare Providers:** Doctors, clinics, and hospitals listed in the system.

- **Project Developers:** Team responsible for building and maintaining AmarShashtho.

- **System Administrator:** Responsible for managing the doctor database and LLM integration.

Secondary Stakeholders:

- **Healthcare Startups:** May adopt or partner with AmarShashtho.

- **Public Health Organizations:** May use it for digital triage in outreach programs.

- **Researchers:** Can study user interaction with AI in healthcare.

Requirement Collection

To gather and validate requirements for AmarShashtho, we will use:

1. **Stakeholder Interviews:**
    - Talking with patients, doctors, and clinic staff to identify use cases and expectations.
2. **Survey Forms:**
    - Collect user pain points regarding doctor search, report interpretation, and symptoms.
3. **Prototype Testing:**
    - A working website or app will be shared with test users for real-world feedback.

Business Value & Revenue Opportunities of AmarShashtho

Core Monetization Methods (Early-Stage)

1. **Doctor Lead Generation (Commission/Listing Fee)**
    - Partner with local doctors, clinics, or hospitals.
    - Charge per referral, appointment booking, or verified lead.
    - Example: If AI recommends a cardiologist, and the user clicks/contacts a local doctor listed via AmarShashtho → you get a cut.

2 **. Priority Listings for Doctors**

- Let doctors list their services for free.
- Charge for:
  - Featured placement
  - Higher visibility
  - Verified badges
  - Custom profile (video, portfolio, reviews)

2. **Ad-Supported Model**
   - Display local health-related ads (e.g. pharmacies, diagnostics labs, online health shops).
   - Google AdSense or direct partnerships with local clinics.
3. **Local Pharmacy & Lab Referral**
   - After AI gives recommendations (e.g., “You may need a blood test” or “Consider antibiotics”), refer to:
     - Nearby diagnostic labs
     - Online pharmacies
   - Earn a cut through affiliate links or partnerships.

Long-Term & Scalable Business Models

In-App Digital Health Services

- AI can generate prescriptions (to be verified by real doctors).
- Partner with licensed telehealth providers.

  Example (https://doctime.com.bd/)

- Charge for:
  - Virtual consultations
  - Digital prescriptions
  - In-app medication orders

AI Health Coach / Monitoring Assistant

- Build on Med-Gemma's multimodal capabilities:
  - Image + text for skin lesions, reports, scans
  - Voice input in future versions
- Offer:
  - Health logs
  - AI-based symptom tracking
  - Personalized health tips
- Monetize via subscriptions.

Technology will be used for Development

- **Frontend (UI):** HTML, CSS, JavaScript
- **Backend:** Flask (Python)
- **Database:** SQLite (used to store local doctor information)
- **LLM Engine:** LM Studio running Med-Gemma model
- **File/Image Handling:** Python with OpenCV or PIL for reading and analyzing uploaded medical documents
- **Location Services:** HTML5 Geolocation API (to detect user's current location)
- **Doctor Search (Backup):** Google Maps (to find nearby specialists if not found locally)

Note on Doctor Location Search Without External API:

To avoid reliance on third-party services like Google Maps, we use a **hybrid method** that combines a **locally stored doctor database**. If no relevant doctor is found in our internal database for the user's area, the AI model will generate a **smart search phrase** (e.g., "dermatologist near Mirpur, Dhaka") based on the user's condition and location.

This phrase is then used to **redirect users to their browser's native map or search engine (Google, Bing, or OpenStreetMap)** via a prefilled URL — no API is called, no API key is needed.

This bypass ensures:

- **Zero cost for external APIs**
- **Improved privacy** (no third-party location tracking)
- **Offline fallback capabilities** as our doctor database grows