



Your Prescription. Made Clear.

A Solution Tailored for Bangladesh

Many people in Bangladesh have trouble reading or understanding the handwritten prescriptions they get from doctors. This can cause confusion, medication misuse, or extra stress. There is a real and growing gap between what doctors and patients understand. This can be due to unclear drug instructions or medical terms that patients don't know.

A cross-platform web application called **Digital Kabiraj** was created to bridge that gap. Modern artificial intelligence (AI) and complete **Bangla language** support enable Digital Kabiraj to assist users in decoding their prescriptions, understanding their medical conditions, and obtaining pertinent medical advice—all in Bangla.

Key Features

1. Analysis of Medical Reports Based on OCR

- Upload test reports or prescriptions in image or PDF format
- Translate and display the extracted contents in Bangla
- Use **Tesseract OCR** to work with both printed and handwritten formats

2. A Medical Intelligence-Powered Chatbot in Bangla

- Patients can ask questions about their health, prescriptions, medicines or tests
- The chatbot responds in **Bangla**
- Powered by a **fine-tuned Gemini model**, enhanced for medical context

3. Interpretation of Vital Signs

- Patients can manually enter their vital signs:
 - **Blood Pressure**
 - **Body Temperature**
 - **Heart/Respiratory Rate**
 - **SpO₂ (Oxygen Saturation)**
- System analyzes and gives a **simple Bangla summary** about the patient's condition

4. Explanation of Drug Side Effect

- When a drug is included in a prescription:
 - The system shows **common side effects in Bangla**
 - Provides **basic do's and don'ts** for the associated condition (e.g., diabetes, hypertension)

5. Directory of Doctors

- Based on patient disease, suggests a list of verified doctors
- Filter by specialization, location, availability
- Provides a simple profile with degrees, experience, and contact info

6. PDF Report & Chat Export

- All prescription analysis and chatbot conversations can be exported as **PDF**
- Helpful for keeping medical records digitally or sharing with others

Technology Stack

Backend (Java)

- **Spring Boot** (RESTful API)
- **PostgreSQL** (SQL database)
- **Apache POI / iText** (PDF generation)
- **OpenNLP / DeepLearning4j** (if further medical NLP processing is needed)
- **Tesseract OCR** (via Java wrapper)
- **Spring Security** (Server-side auth & security)

Frontend – Built with React

- **React.js + React Router**
- **Tesseract.js** (Client-side OCR when needed)
- **Framer Motion & DaisyUI** (Animations and clean UI components)

User Flow

1. **Upload Prescription** → Extracted via OCR → Translated to Bangla
2. **See Summary** → Drug names, vital signs, condition-based advice
3. **Chat with Bot** → Ask questions in Bangla or Banglish
4. **Get Suggestions** → Related info, side effects, next steps
5. **Browse Doctors** → If necessary, find relevant specialists
6. **Export PDF** → Save results and conversations for later use

What Makes Digital Kabiraj Unique?

- **AI + Language:** Personalized responses in Bangla using a trained Gemini-based LLM
- **Prescription Understanding:** No need to decode doctor's handwriting
- **Care Beyond Translation:** Includes advice, side effects, and condition explanation
- **Patient-Centric Design:** Mobile-friendly, easy-to-use for rural and urban users alike
- **Secure & Private:** All data stays with the user; no public sharing

Future Ideas

- Real-time telemedicine integration
- Smart reminder system for medication
- Automatic disease classification based on symptoms
- Voice command support for visually impaired patients