AI-Powered Healthcare Operating

System Problem Statement:

India’s healthcare suffers from fragmentation—*65% of patient records remain on paper*, leading to repeated tests, misdiagnoses, missed follow-ups, and overworked doctors. Rural areas face the brunt of this, with limited access and poor continuity of care. Government programs like ABDM aim to digitize healthcare but struggle with weak integration, low rural adoption, and lack of real-time tracking. But here’s the solution: our AI-powered platform uses OCR, NLP, and voice technology to instantly digitize records at the source. It reduces manual workload, ensures smooth access to medical histories, empowers patients with digital control, and gives governments real-time insights for faster action and measurable health outcomes

Target Audience & Context:

Our solution helps patients of all ages, from urban hospitals to rural clinics, who have no easy means of accessing full medical history.

It helps **physicians and nurses** who are slowed down by paperwork so that they can spend more time caring and less on writing**. Rural health workers** like ASHAs, who often rely on pen and paper, can now utilize voice tools even when offline. For example, an ASHA can record the vitals of a child using voice in her native language. It is also useful for health systems that need automated, quality data to improve care and reduce errors between facilities. Why This Problem Matters Now: A person is diagnosed with diabetes every 5 seconds in India — and most of them are not even aware of it until it is too late.

With 77 million+ diagnoses and mounting heart disease, our healthcare is playing catch-up after damage has already been inflicted.

The truth? These afflictions can be prevented through early surveillance and prompt notifications. AI can recognize warning signs before lives are lost — but we're not implementing it fast enough. The cost of delay? More lives, more ruin.

Our Solution:

1.Medical Prescription Digitization & Automation

About the Product:

Our tool makes it easy to turn handwritten or printed medical prescriptions into clean, digital health records instantly. It helps patients keep track of their medications, reminds them when to take their doses, and even verifies the doctor’s credentials for added trust.

Technical Workflow: How It Works

The journey starts when a user uploads a photo of their prescription. The image is cleaned up using de-skewing and noise reduction for better readability. A **visual transformer**

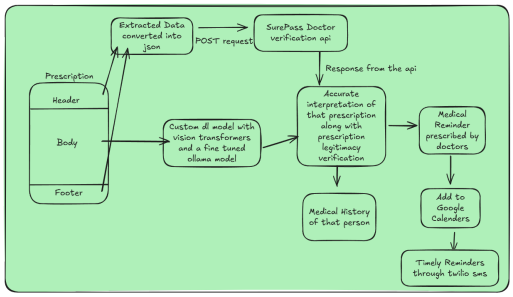
model like LayoutLMv3 or LLaVA then breaks the prescription into three logical sections: the **header** (doctor and clinic details), **body** (medications and instructions), and **footer** (signatures and license info). A fine-tuned language model like Ollama interprets the content of each section. Doctor credentials are pulled from the header or footer and instantly verified via the **SurePass API** to ensure authenticity. Meanwhile, the body is analyzed to extract medicine names, dosages, frequency, and duration, which are neatly structured into a JSON format. Once verified, this data is securely stored as part of the patient's digital health record. If the prescription includes timing or duration instructions, the system automatically creates smart reminders through calendar sync, app notifications, or messaging APIs making it easier for users to follow their treatment correctly.

Why This is Better:

Unlike basic OCR tools, our solution goes further by using Visual Transformers to understand layout and a fine-tuned LLM for deep contextual interpretation. This allows it to accurately extract even complex, handwritten prescription data. Plus, with built-in doctor verification and smart medication reminders, it turns static prescriptions into dynamic, actionable health records that actually support better care and patient outcomes.

Why Our Approach is Better than Existing Solutions:

Most existing tools either stop at extracting plain text or depend heavily on manual data entry, offering limited real-world use. Our solution takes an AI-first approach, combining visual document understanding with deep semantic analysis to produce verified, structured medical records. It goes beyond basic digitization by enabling features like smart medication reminders and insurance-ready formats.



2. Doctor Voice Assistant

About the Product

Doctor Voice Assistant is a voice-powered tool that helps doctors create structured digital prescriptions simply by speaking. It streamlines clinical workflows by transcribing and organizing spoken input into accurate medical records. With support for multiple languages, it's accessible to doctors and patients across regions. Each prescription includes a digital signature and must be verified by the doctor within 10 hours via a secure SMS or email link, ensuring both accountability and data integrity.

Technical Workflow: How It Works

The process begins with doctors speaking directly into a mobile or web app, where voice input is transcribed using a medical-aware speech model like **Whisper** or **Google Cloud Speech-to-Text**, with support for multiple languages. This transcription is then structured

using an **NLP** model that extracts key elements like doctor and patient details, diagnosis, and prescribed medication.

Once the prescription is complete, the doctor signs it digitally via touchscreen or signature pad. A secure, token-based verification link is then sent via SMS or email using **SMTP**, requiring doctor approval within 10 hours. Unverified prescriptions are auto-expired to ensure security. A simplified, patient-friendly summary is also generated for easy recall.

Why This is Better:

This solution speeds up prescription writing while maintaining full control and security. It ensures prescriptions are clear, fast, and verifiable, helping doctors stay efficient without compromising safety. Support for multilingual input and simplified summaries improves communication across diverse settings. The built-in 10-hour verification window adds an extra layer of accountability, giving doctors time to review and confirm each prescription before it becomes official.

Why Our Approach is Better than Existing Solutions:

Most voice-based prescription tools stop at transcription, relying on manual checks that can lead to errors or misuse. Our system adds a secure, time-bound verification step via SMS or email to ensure every prescription is reviewed and approved by the doctor. This added layer of accountability makes it ideal for real-world clinical use, especially in settings with high language diversity, limited time, and strict legal responsibility.

3. Intelligent Medication Reminder and Notification System

Our intelligent reminder system simplifies medication management by turning prescriptions into smart, automated alerts. It syncs with Google Calendar and sends timely notifications via SMS or WhatsApp, so users never miss a dose. Unlike most apps, it combines automation with manual flexibility, supporting both personal and doctor-driven schedules. This makes it especially helpful for patients juggling multiple medications or caregivers managing others' treatments.

4. Smart Healthcare Assistant with Integrated Insurance Claim Support

This all-in-one healthcare assistant manages medical records, prescriptions, reminders, and insurance claims in one place. It uses AI to extract and structure data from prescriptions, automate reminders, and streamline claim submissions. By connecting directly with insurance providers, it removes paperwork and delays during critical moments. Unlike fragmented apps, it offers a seamless, end-to-end experience that truly supports patients when they need it most.

Tech Stack

1. Frontend – Next.js
2. Backend – Django RestFramework, Flask API, Fast API