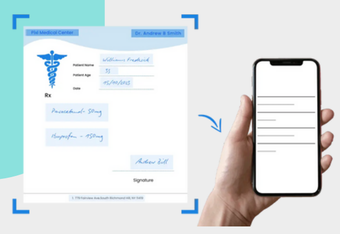
MEDICARE: AN AI-POWERED HANDWRITTEN PRESCRIPTION RECOGNITION SYSTEM

Aiming to reduce medical errors, this project introduces an AI-driven mobile solution to interpret handwritten prescriptions. It tackles challenges of illegible text through deep learning and integrates LLMs to validate medicine names—offering safer, more reliable prescription interpretation.



PROJECT OVERVIEW

Handwritten prescriptions can be misread, risking incorrect medication. This project delivers an AI-powered mobile app that scans, detects, and validates prescriptions using machine learning. The system includes a Flutter frontend and FastAPI backend, leveraging YOLOv5 for text detection, CNN for handwriting recognition, and GPT-4 for medicine validation. Users receive real-time medicine details like dosage and side effects. With Firebase support for history tracking, the app improves communication between patients, pharmacists, and caregivers, ensuring safer and more reliable prescription interpretation.

SYSTEM DESIGN

The user interface is developed using Flutter and designed for ease of use by non-technical users:

- Prescription Upload: Users can scan or upload images for processing.
- Detection & Extraction: Detected text regions are cropped and recognized using the CNN model.
- Three-Query System: Allows users to explore dosage, side effects, and usage with a tap.

TECHNOLOGIES

To achieve high accuracy in prescription digitization, several advanced techniques are used:

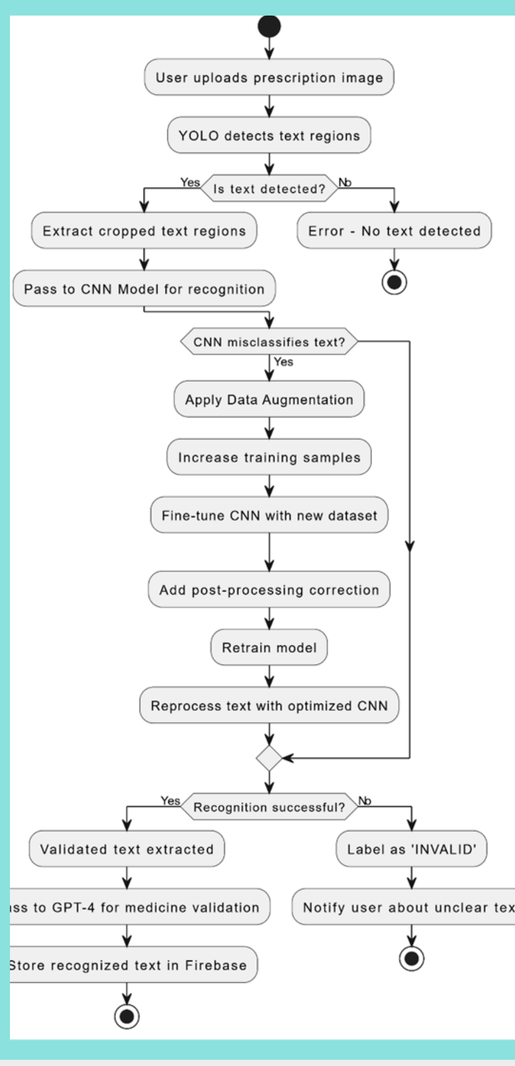
- YOLOv5 for Text Detection: Accurately crops handwritten regions from prescription images.
- CNN-Based Text Recognition: Trained on the IAM dataset and refined with data augmentation to enhance generalization.
- GPT-4 Medicine Validation: Validates and auto-corrects detected medicine names using a large language model.

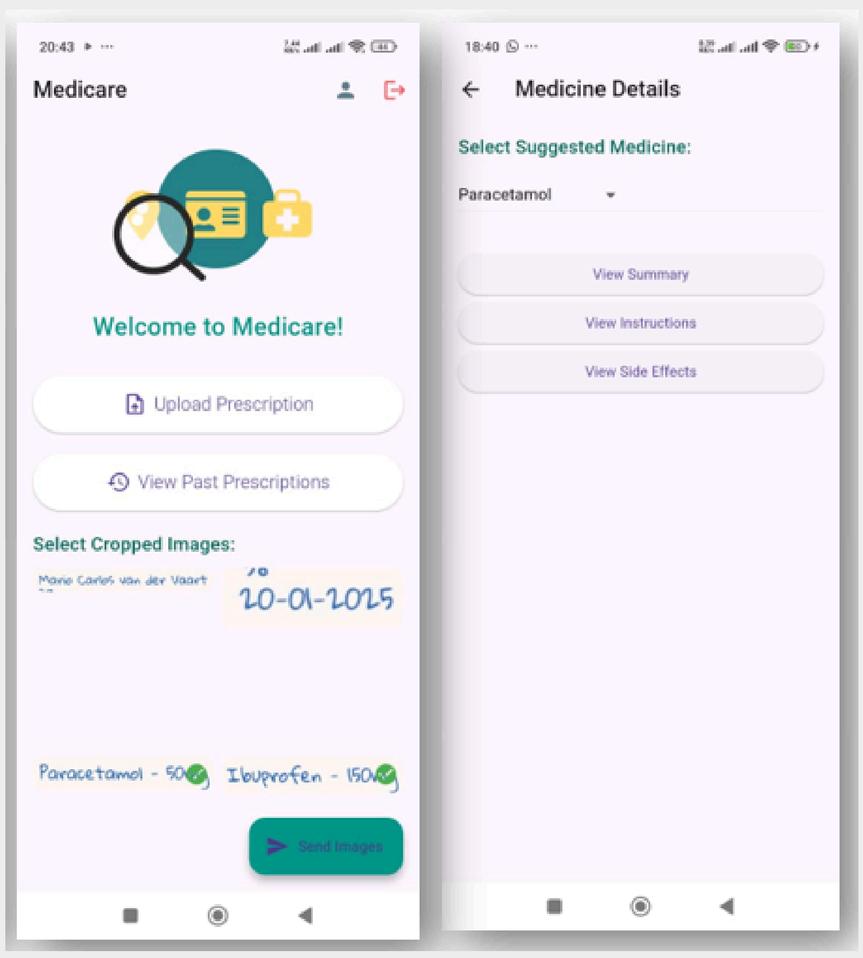
NEXT STEPS...

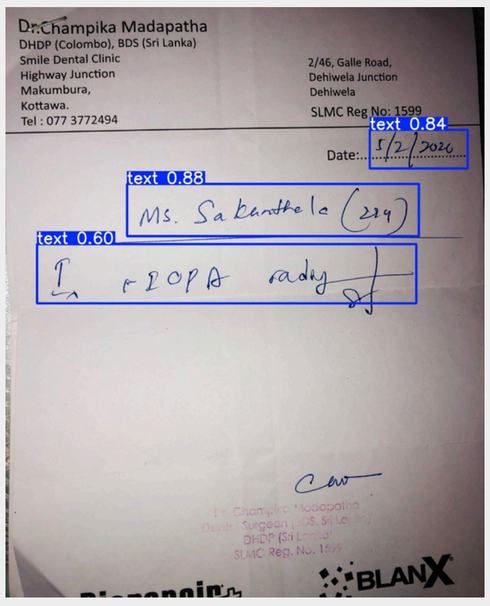
- Deployment to cloud platforms (AWS or Firebase Hosting) for real-time global access.
- Multilingual prescription support for diverse patient populations.

SYSTEM ARCHITECTURE

- Modular Design: Frontend and backend communicate via APIs, allowing independent updates.
- Local Deployment: Cost-effective setup while maintaining performance.
- FastAPI Integration: Ensures smooth backend access from the mobile frontend.







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