25 UmiDo: AI 기반 스마트 알림 시스템

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Problem

Problem Background

Fragmented Life Management and Cognitive Overload
Unintelligent and Passive Reminder Systems
Disconnected Communication and Lack of Oversight

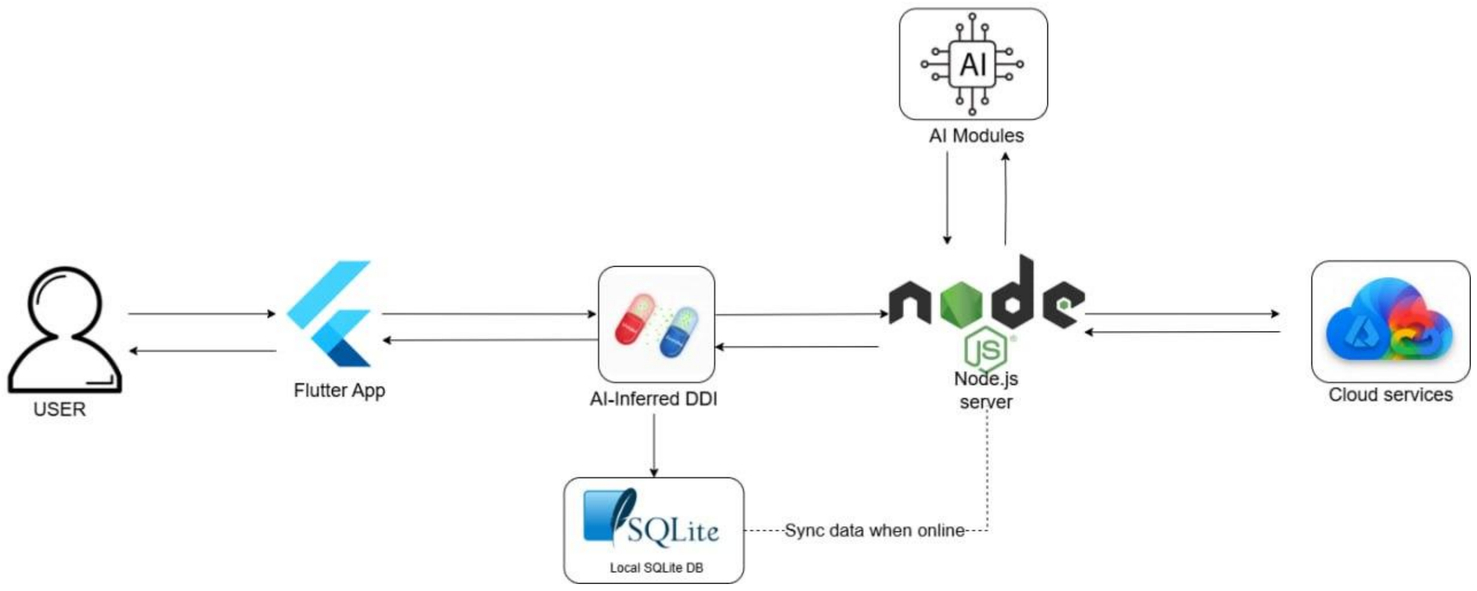
Project Objective

Build a smart notification system with AI/NLP that can:

- **Develop an AI-Powered Prescription Parser**
- **Build an Adaptive, Cross-Domain System**
- **Create an Integrated Communication and Monitoring Hub with Chatbot**
- **Implement Comprehensive Dashboards for Tracking and Oversight**

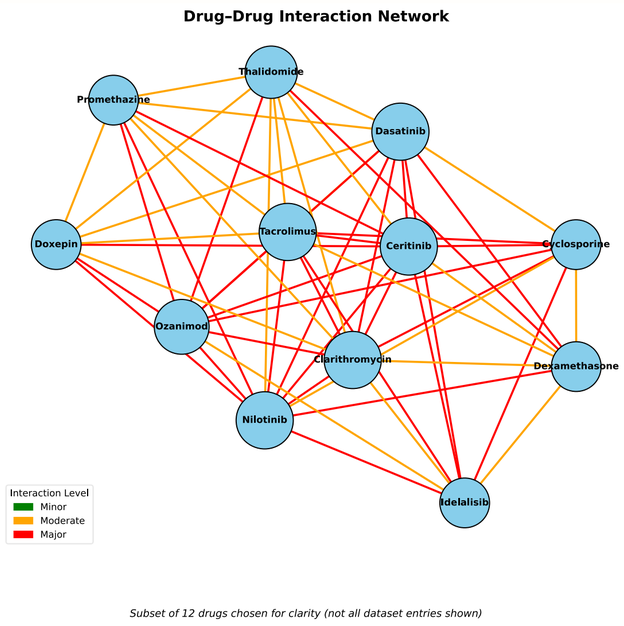
System

Workflow Explanation



Authentication: Login & user management handled via **Google Cloud** or **Node.js**.
Data Storage: Tasks saved in both **SQLite (local offline)** and **Azure SQL (cloud)**.
Offline Mode: If offline, data stays in **SQLite** and later **syncs to Azure** when online.
Backend: **Node.js server** manages sync, requests, and communication.
AI/NLP Modules: Includes **chatbot**, **document parser**, and **NLP** for smart document parsing.
Drug–Drug Interaction (DDI): Dedicated module checks for medication conflicts.
Notifications: Smart reminders generated and delivered back to the user.

AI Modules Pipeline



Subset of 12 drugs chosen for clarity (not all dataset entries shown)

DDI

Data Collection: Normalize drug names; gather chemical structures, pharmacology, and side-effect info → **Feature Engineering**: Generate drug pairs; compute chemical similarity, shared targets, and side-effect overlaps → **Signal Detection & Labeling**: Extract potential interactions from literature, co-prescription patterns, and FAERS → **Model Training & Analysis**: Train multiple ML algorithms to predict interaction likelihood and severity; interpret key features

Parser

Prescription Parsing: Extract medication names and instructions from prescription → **Medication Matching (RapidFuzz)**: Match extracted medication names to the normalized drug list using string similarity → **Instruction Processing (NLP → JSON)**: Parse instructions and convert them into structured JSON suitable for SQL storage

Chatbot

User Input Processing: Capture and preprocess the user's text → **Primary Matching**: Quickly match input to predefined instructions with high confidence → **Secondary Matching (Fallback)**: Attempt a more flexible match if primary fails → **Gemini API (Fallback of Fallback)**: Handle ambiguous or unmatched inputs → **Query Execution & Response Generation**: Run the SQL query and generate the response