

# AI-Based Health Risk Prediction Dashboard

This project is a modular, full-stack AI/ML system designed to provide preventive and educational health risk insights. The platform integrates multiple independent AI components, each solving a distinct problem, while avoiding medical diagnosis and focusing on explainable, user-centric analytics.

## Project Objective

To build a scalable and explainable health analytics platform that combines automation, classical machine learning, deep learning, retrieval-augmented generation, agent-based reasoning, and multi-agent collaboration to deliver holistic health insights.

## Core Components

- **1. n8n Automation:** Orchestrates data collection, scheduled analysis, image ingestion, and notifications without performing any intelligence or prediction.
- **2. ML Risk Prediction Model:** Uses structured lifestyle and biometric data to predict health risk scores (e.g., diabetes or cardiac risk) with explainability.
- **3. Deep Learning Image Classifier:** Extracts visual health signals from images such as skin condition, food quality, or posture.
- **4. Agentic RAG System:** Answers user health queries using verified sources (WHO, public health guidelines) with grounded, citation-based responses.
- **5. LangChain Agent:** Interprets raw ML/DL outputs and translates them into human-understandable insights and trend explanations.
- **6. CrewAI Multi-Agent System:** Simulates a virtual health advisory board (nutrition, fitness, lifestyle, mental wellness) to generate balanced action plans.

## System Workflow

User data and images are orchestrated through automated workflows. Independent AI models analyze structured, visual, and knowledge-based inputs. Insights are reasoned upon and finally synthesized by a multi-agent system before being presented on a health dashboard.

## Key Highlights

- Six fully independent AI components with clear boundaries
- Explainable and non-diagnostic health analytics
- Strong full-stack and system-design orientation
- Highly suitable for internships, research demos, and interviews