

DeepMed – Multi-Model Comparative Analysis and Evaluation Platform for Medical AI

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Abstract: DeepMed is a unified AI-driven platform designed to integrate, evaluate, and compare **multiple pre-trained deep learning models for medical diagnosis** and research. It bridges the gap between scattered medical AI models by providing a **web and mobile-based** application that allows users to upload **medical data (MRI, tabular, or handwritten)** and obtain predictions from various disease-specific models such as Cancer, Tumor, and Alzheimer's. The system aggregates predictions, provides **comparative analytics**, and links to **original research papers for transparency** and academic use. By offering model accessibility, interpretability, and scalability, DeepMed supports **students, researchers, and healthcare professionals** in exploring reliable medical AI solutions.

Tools and Technologies:

Languages: Python, JavaScript, Dart

Frameworks: Django/Flask (Backend), Flutter (Frontend)

ML Libraries: TensorFlow, PyTorch, ONNX Runtime

Database: PostgreSQL, Firebase, Supabase

Version Control system : Git & Github

Deployment: AWS / GCP / Azure Cloud / Render

Scope:

Domains: Cancer, Tumor, Alzheimer's (MRI & tabular) and many more.

Inputs: MRI, CT, CSV (patient data), text, handwriting

Outputs: Per-model predictions + summarized diagnosis result

Example: Upload Alzheimer's MRI → Run 10 models → "Positive (8), Negative (2)" + research links.

Methodology

- Model Collection & Permissions
 - Identify and obtain research models.
- Backend
 - API-based inference system for model deployment.
- Frontend
 - Flutter mobile app + Django/Flask web interface.
- Aggregation Logic
 - Comparative evaluation using ensemble metrics.
- Database
 - Metadata, accuracy, paper links, and author details.

Significance

DeepMed enhances research transparency, promotes AI-assisted healthcare, and provides an educational resource for understanding and comparing state-of-the-art medical models—all in one accessible platform.

Key Features

Model Integration – Collects and deploys pre-trained medical AI models from multiple domains.

Multi-Model Prediction – Runs several models simultaneously on a single input.

Comparative Analytics – Aggregates outputs using majority voting or weighted accuracy.

Research Access – Direct links to original research papers and author information.

Cross-Platform Accessibility – Available on both web and mobile platforms.

Scalable Architecture – Easily extendable to new diseases or model types.

Expected Outcomes

- Functional AI-based diagnostic comparison platform.
- Categorized model library with metadata and citations.
- Real-time multi-model prediction system.
- Improved accessibility and reproducibility of medical AI research.