Heal Labs

Product

Problem

The problem statement revolves around the challenges within the healthcare system, encompassing limited access to affordable care, instances of misdiagnosis, extended wait times, high costs associated with report analysis, difficulties in maintaining accurate medical records, and the scarcity of medical imaging analyzers. Additionally, there's a high need for a platform to aid doctors in appointment management.

Solution

Our solution offers a holistic approach. We facilitate expert appointments, provide instant AI-powered pathology analysis, maintain comprehensive health records, and offer mental health assessments through an interactive chatbot. Our platform is designed to be user-centric, providing the following solutions.

- By leveraging advanced technologies, the platform will ensure instant diagnosis, allowing the diagnostic process to be expedited and the outcome of patients improved.
- An AI-powered pathology analysis tool to enhance the accuracy and speed of diagnostic procedures.
- A comprehensive system for maintaining records of medical reports, ensuring easy access and organization of patient data.
- Utilize analytics to provide insights and recommendations based on previous medical records, aiding in more informed decision-making.
- A feature for obtaining second opinions on medical imaging results, facilitating thorough diagnosis.
- Efficiently schedule appointments for expert consultations, ensuring timely access to specialized care.
- The telemedicine platform will enable patients to access doctors remotely, offering convenience and flexibility in healthcare delivery.

Target Audience

Healthcare Providers: Hospitals, clinics, and individual practitioners seeking solutions to streamline operations and improve patient care.
Patients: Individuals looking for convenient and affordable healthcare services, including remote consultations and health monitoring.
Insurers: Insurance companies interested in leveraging digital health solutions to optimize claims processing and risk management.

Engineering

High-Level Design

The solutions provided by Heal Labs address the Healthcare Challenges in various ways. A detailed explanation of these solutions is as follows:

The interactive chatbot is responsible for taking the symptoms from the patients and diagnosing the possible disease. The chatbot diagnosing functionality is limited to only 4 diseases for now which are as follows:

- Gastroscopy
- Liver
- Kidney
- Brain

The chatbot responds to the user according to their query. **Additionally, the model restricts itself from prescribing any kind of medication against queries by not pretending to be a doctor.**

Role of Generative AI

The fundamental role of generative is to tackle the following healthcare challenges:

- Leveraging the healthcare dataset to diagnose the diseases based on the symptoms
- Converting the pathology reports into textual data and providing the analysis based on the standard KPIs.
- Assist patients in understanding their diseases and responding to their queries

Deep Learning

Transforming nifit medical images, segmented images display to doctors.

Technologies

NLP, Large Language Models (LLM) and Langchain. Computer Vision

Result and Analysis

Going Forward

After achieving accuracy to a certain threshold for all the features on the Heal Labs platform we are committed to enhancing the current diagnosis feature for other kinds of diseases. As part of the project, we are also planning to include a mental health analysis feature that will enable users to assess their mental health through an interactive chat. At first, only text data would be analyzed, but in the future, voice-based analysis features would also be supported. We believe that Heal Labs can help patients get affordable and easy-to-access pre-diagnosis, empowering them with the knowledge of their health status through report analysis, and can also assist doctors and patients in having a second opinion on medical imaging results.

Citations

1. https://docs.safe.com/fme/html/FME-Form-Documentation/FME-ReadersWriters/nifti/nifti.htm