Project Idea Submission

Group 14 – Project ID 2

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HealthBot+ - AI-Powered Web App for Skin Disease Diagnosis and Management

Introduction

Skin diseases, including cancer, affect millions worldwide. Early detection and accurate diagnosis are crucial for effective treatment and better patient outcomes. HealthBot+ aims to develop an AI-powered web application that assists users in identifying skin diseases using image analysis and text-based inputs. Leveraging pre-trained models and transfer learning, HealthBot+ will diagnose skin conditions and provide comprehensive support through a chatbot trained in oncology. This project will ensure transparency through explainable AI, allowing users and doctors to understand the AI's decision-making process.

Proposed Solution

HealthBot+ will be a web application that allows users to log in, input personal details, and upload photos of their skin conditions for analysis. The application will utilize pre-trained models and transfer learning to identify various skin diseases, including cancer, Actinic Keratosis, Atopic Dermatitis, Benign Keratosis, and Dermatofibroma. If cancer is detected, a specialized chatbot will provide additional information and medical advice.

Here are the key features to be expected:

- User Interface: A user-friendly, responsive web interface for inputting data and viewing results along with user authentication and data privacy.
- Image Analysis: Use of pre-trained neural networks (e.g., ISIC Melanoma Detection Models) with transfer learning to identify skin diseases.
- Chatbot: An oncology-trained chatbot offering detailed information and medical tips.
- Explainable AI: Integration of XAI techniques to explain diagnosis results in the medical reports, enhancing transparency.

- Doctor Integration: For paid members, each user is assigned to a doctor who can access and review diagnostic results, confirm diagnoses, and initiate treatment.
- Medical Reports: Automated generation of medical reports using XAI, sent to doctors for validation.
- In case of skin diseases, further questions will be asked to narrow down the predications
- Data Management: Secure storage and management of patient data and disease history.

Datasets

SIIM-ISIC Melanoma Dataset – To decide whether the target is malignant or benign (Hope to use the pre trained model for this) (https://www.kaggle.com/competitions/siim-isic-melanoma-classification/data)

Skin diseases CNN classification – To finetune the above model using transfer learning to detect various other skin diseases (https://www.kaggle.com/code/firefly55lm/skin-diseases-cnn-classification/input)

MedlinePlus Connect API: For accessing comprehensive health topics and medical content.

symptom-2-disease-net Hugging Face model for the chatbot to predict the disease.

Similar Projects

SkinVision:

An app that helps users assess skin conditions, particularly for detecting signs of skin cancer.

URL: SkinVision