AI-Powered Medical Diagnosis System

Submitted by: Subhash Kumar

Institution: L.N. Mishra College of Business Management, Muzaffarpur

Date: 19 March 2025

Acknowledgment

Abstract

This project presents an AI-based medical diagnosis system designed to enhance the accuracy and efficiency of disease identification. The system leverages deep learning and natural language processing to diagnose diseases based on patient symptoms and medical images. By integrating AI into healthcare, this project aims to assist medical professionals, reduce diagnostic errors, and provide faster patient care.

Introduction

Accurate and timely diagnosis is crucial in healthcare. Traditional diagnosis methods often depend on human expertise, which can be prone to errors. This project introduces an AI-based medical diagnosis system that leverages machine learning to detect diseases, helping doctors and patients receive reliable and quick diagnostic support.

Problem Statement

Many patients suffer from misdiagnoses due to human limitations and delayed medical responses. In rural and remote areas, expert medical professionals may not always be available. This AI-powered system aims to bridge this gap by providing an efficient, accurate, and accessible diagnosis platform.

Objectives

- Develop an AI model capable of diagnosing diseases based on symptoms and medical images.
- Improve diagnosis accuracy and reduce human errors.
- Make healthcare more accessible to remote areas.
- Provide an easy-to-use interface for medical professionals and patients.

Methodology

The project follows a structured approach:

1. **Data Collection**: Gathering medical datasets from Kaggle and healthcare sources.

2. **Data Preprocessing**: Cleaning, normalizing, and augmenting data for better accuracy.

3. **Model Selection**: Using CNN for image-based diagnosis and NLP for text-based diagnosis.

4. **Training & Testing**: Training the AI model using TensorFlow, PyTorch, and Scikit-learn.

5. **Implementation**: Developing a web-based application for users to input symptoms and receive AI-generated diagnoses.

Technologies Used

- Programming Language: Python

- Frameworks: TensorFlow, PyTorch, Scikit-learn

- Database: MySQL/MongoDB

- Frontend: React/Flask/Django

- Tools: OpenCV, Pandas, Matplotlib

Results & Discussion

The AI model demonstrated high accuracy in disease prediction, reducing diagnostic errors and improving response time. The system successfully classified medical images and symptoms with a high precision rate, making it a reliable assistant for healthcare professionals.

Future Enhancements

- Increasing dataset size to enhance accuracy.

- Integrating AI with IoT wearable devices for real-time health monitoring.

- Expanding the system to detect a wider range of diseases.

- Deploying the system on mobile applications for easier accessibility.

Conclusion

This AI-powered medical diagnosis system showcases the potential of machine learning in revolutionizing healthcare. It provides fast, reliable, and accessible diagnostic support, making

healthcare more efficient. With future improvements, it can become an integral part of modern medical systems.

References

1. TensorFlow Documentation - https://www.tensorflow.org/

2. Kaggle Medical Datasets - https://www.kaggle.com/

3. WHO Reports on Misdiagnosis - https://www.who.int/