AI-Based Disease Prediction System

Abstract:

This project aims to develop an AI-based disease prediction system using machine learning algorithms.

By analyzing patient symptoms, the system predicts the most probable disease, assisting doctors in early diagnosis.

Introduction:

Healthcare systems generate vast amounts of medical data, which can be leveraged for predictive analysis.

Machine learning techniques help automate disease diagnosis, reducing human error and enhancing efficiency.

This project implements a Random Forest Classifier to predict diseases based on symptom input.

Objectives:

- Develop an AI model to predict diseases based on symptoms.
- Improve diagnostic accuracy using machine learning.
- Provide an easy-to-use system for patients and doctors.

Methodology:

1. Data Collection - A dataset containing symptoms and corresponding diseases is used.
2. Data Preprocessing - The data is cleaned, missing values are handled, and categorical values are encoded.
3. Model Training - A Random Forest Classifier is trained using symptom data.
4. Testing & Evaluation - The model is tested with real-world symptoms to measure accuracy.
5. User Input Prediction - Users input their symptoms, and the system predicts the probable disease.

Results & Discussion:

The trained Random Forest model achieved a high accuracy rate in disease prediction.

The system provides an intuitive interface for users to input symptoms and receive predictions.

Future improvements can include integrating real-time patient data and expanding the symptom database.

Conclusion:

AI-based disease prediction systems have the potential to assist healthcare professionals in early diagnosis,
reducing workload and improving patient care. Further enhancements can include deep learning models and
real-time medical data integration.

Future Scope:

- Integration with electronic health records (EHR)
- Implementation of deep learning for more precise predictions
- Mobile application development for wider accessibility

References:

- Research papers on AI in healthcare
- Medical symptom databases
- Machine learning documentation