

Medical Disease Predictor

Shania Margaret Saini

Submission Deadline: August 28, 2025



Unveiling the Future of Health: Our Mission

This project bridges the gap between complex medical data and actionable insights, fostering a proactive approach to patient care.

Project Description

The Medical Disease Predictor is an AI-driven system designed to analyze patient symptoms, medical history, and relevant health parameters to predict the likelihood of specific diseases. By leveraging machine learning algorithms and medical datasets, the system can provide early warnings, risk assessments, and possible diagnoses. This project aims to assist both patients and healthcare professionals by offering a quick and accessible tool for preliminary medical guidance, which can help reduce diagnostic delays and improve patient outcomes.

Core Goal

The primary goal of the project is to develop a reliable and user-friendly platform that can accurately predict potential diseases based on user input. The system should serve as a supportive tool for early diagnosis, guiding patients toward professional medical consultation when necessary. Additionally, it seeks to raise awareness about preventive healthcare, empowering individuals to monitor their health proactively and make informed lifestyle or medical decisions.

The Engine Behind the Predictions

Our Medical Disease Predictor is built on a robust technological foundation, ensuring accuracy and reliability.

Machine Learning Core

- Hybrid ensemble of Random Forest, SVM, and Naive Bayes classifiers for superior predictive power.
- TensorFlow/Keras integration for advanced neural network capabilities.

((|))

Data Engineering

- Comprehensive dataset with Kaggle.
- Advanced oversampling techniques to balance data and prevent bias.



Development & Tools

- Developed using Python with essential libraries: pandas, scikit-learn, numpy.
- User-friendly interface powered by Streamlit for seamless interaction.

Impactful Results: Predicting Health Outcomes

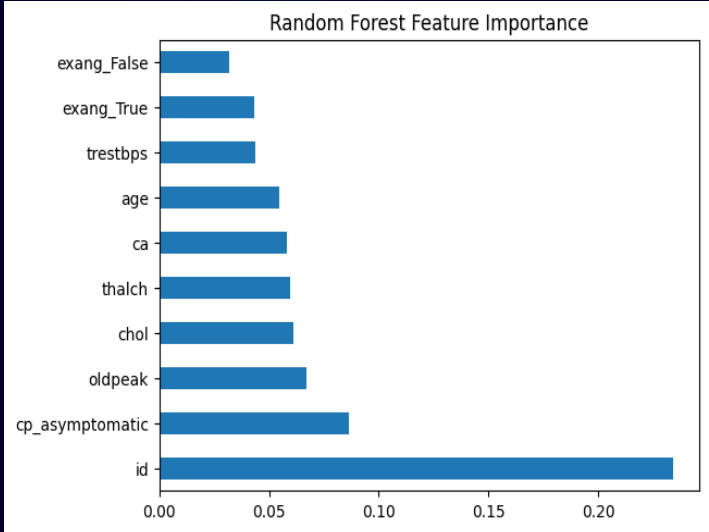
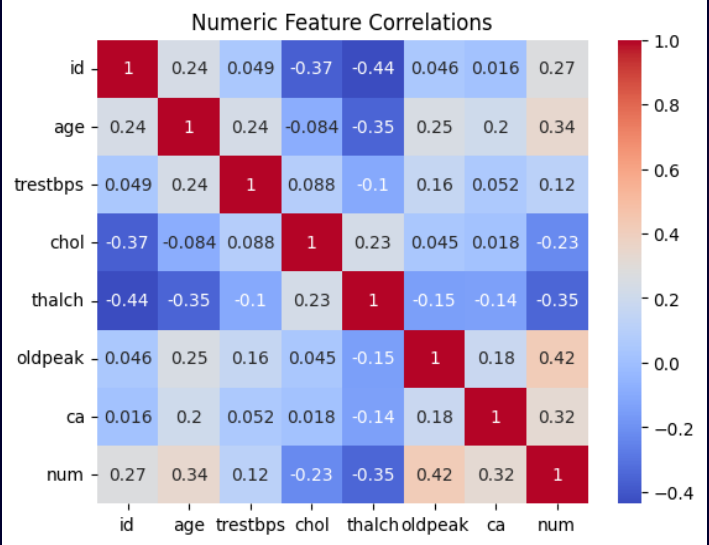
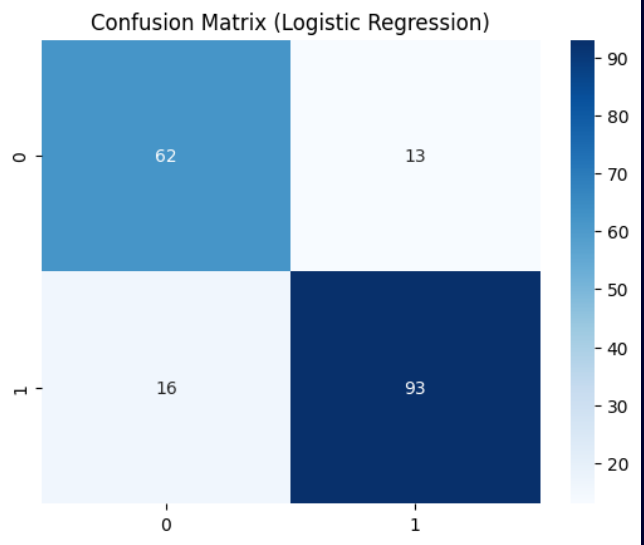
Our Medical Disease Predictor delivers tangible results, showcasing its potential to transform diagnostics.

Prediction Accuracy

Our ensemble model consistently achieves disease prediction accuracy in the **80-90% range**, providing reliable early insights.

Confusion Matrix Visualization and Random Forest

The visual representation of our model's performance shows strong reliability, with most predictions aligning correctly on the diagonal.



Logistic Rgression Accuracy: 0.842391304347826

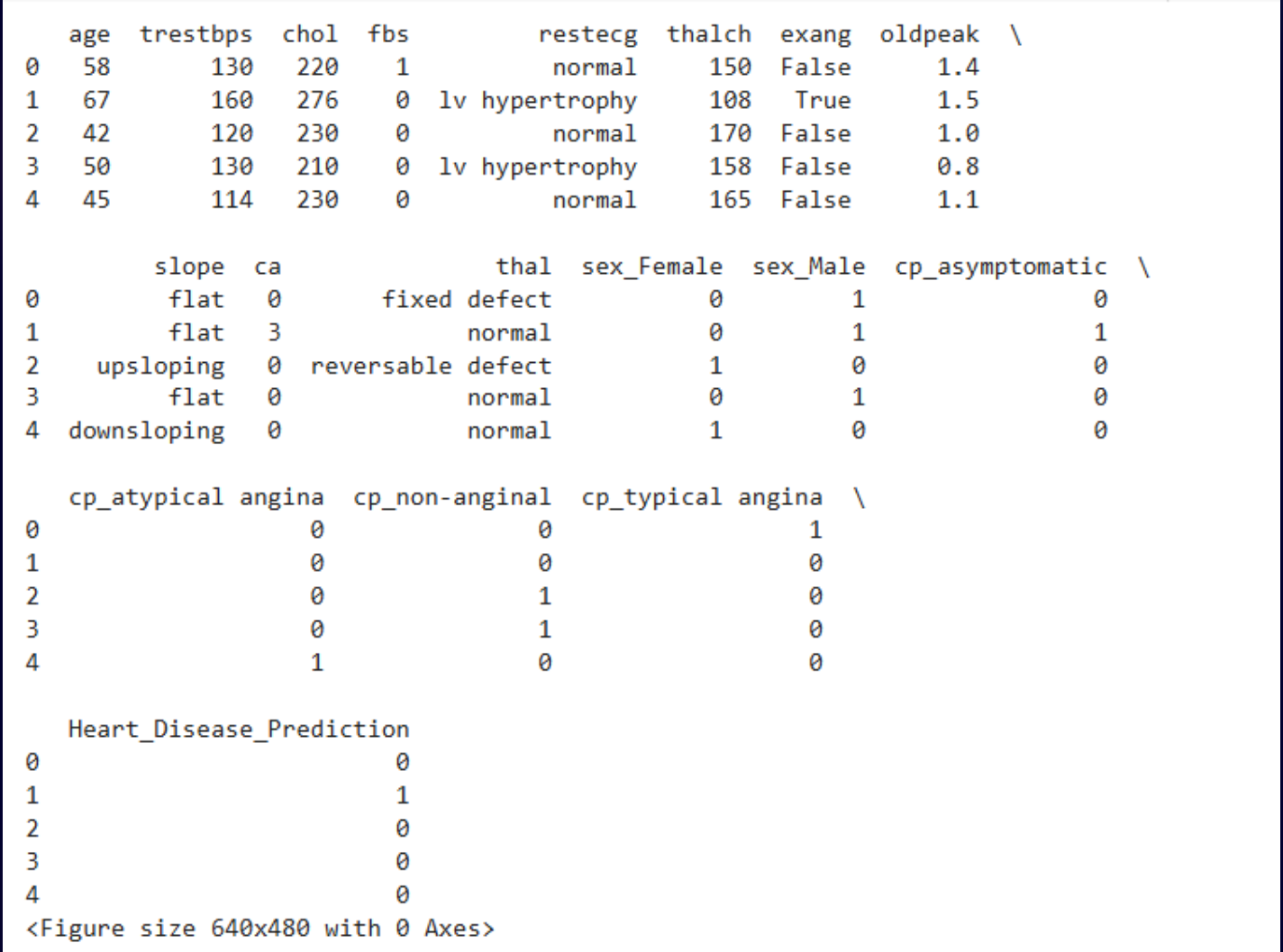
| | precision | recall | f1-score | support |
|--------------|-----------|--------|----------|---------|
| 0 | 0.79 | 0.83 | 0.81 | 75 |
| 1 | 0.88 | 0.85 | 0.87 | 109 |
| accuracy | | | 0.84 | 184 |
| macro avg | 0.84 | 0.84 | 0.84 | 184 |
| weighted avg | 0.84 | 0.84 | 0.84 | 184 |

<Figure size 640x480 with 0 Axes>

User Interface & Sample Output

A clean, intuitive interface allows for easy symptom input, leading to clear, actionable predictions.

For a given set of symptoms, the system confidently identifies “Heart Disease” with strong majority model agreement, demonstrating its practical utility.





A Vision for Healthcare Transformation

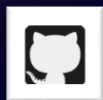
In the future, the Medical Disease Predictor can be enhanced by integrating real-time data from wearable devices, electronic health records, and IoT-based medical sensors. With advancements in deep learning and natural language processing, the system could evolve to provide more precise and personalized predictions. Incorporating telemedicine features and multilingual support could further expand its accessibility, especially in remote and underserved regions. Furthermore, collaboration with healthcare providers could allow the system to be used as a clinical decision support tool, bridging the gap between AI technology and professional medical care.



Join Us in Shaping the Future of Health

We invite you to support this vital innovation in AI-powered healthcare.

Contact



https://github.com/shania67/Medical_Disease_Prediction

Together, we can **transform disease management** and **save lives** worldwide.