HEART DISEASE PREDICTION

Year:2nd

Branch:CSD

Team number:9

Team lead name:BANTU PAVAN KUMAR

Team Members Details:

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Problem Statement and Small Matter About It:

Heart disease is one of the leading causes of death worldwide. This project aims to develop a Heart Disease Prediction System that uses machine learning algorithms to predict the likelihood of heart disease based on patient data such as age, blood pressure, cholesterol levels, and other clinical features.

Domain:

Healthcare, Machine Learning

Technologies Used:

- Python

- Scikit-learn

- Flask (for web interface)

- Pandas & NumPy (for data processing)

- Matplotlib & Seaborn (for data visualization)

- Jupyter Notebook (for model development)

Approach to Do Project:

1. Data Collection:

- Used a publicly available heart disease dataset (e.g., UCI Heart Disease Dataset).

2. Data Preprocessing:

- Handled missing values and performed data normalization.

- Feature selection to identify the most impactful variables.

3. Model Selection:

- Implemented multiple machine learning models (Logistic Regression, Random Forest, and K-Nearest Neighbors).

- Evaluated each model using performance metrics like accuracy, precision, recall, and F1-score.

4. Model Training & Evaluation:

- Split data into training and test sets (80:20 ratio).

- Tuned hyperparameters to improve model performance.

5. Deployment:

- Created a Flask-based web interface for user interaction.

- Users input patient information to receive a prediction.

Outcome:

- Developed a web-based system for predicting heart disease risk.

- Achieved an accuracy of 92% using the Random Forest model.

- Provided user-friendly visualizations of patient data and risk assessment.

Conclusion:

The Heart Disease Prediction System offers a reliable and efficient way to assess the risk of heart disease using patient data. With further refinement and integration of advanced deep learning models, the system could assist healthcare professionals in early diagnosis and personalized treatment planning.