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Disease Predictor using Machine Learning

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Introduction

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Project: Predicting Heart disease using patient health data

Bootcamp topics covered:

- Data preprocessing & cleaning
- Exploratory Data Analysis (EDA)
- Model training (Logistic Regression, Random Forest)
- Model evaluation & deployment

Dataset & Preprocessing

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Dataset: Heart Disease UCI dataset (Kaggle)

Steps:

- Handling missing values
- Encoding categorical variables
- Scaling numeric features

EDA: Histograms & correlation heatmaps.

Model Training - Logistic Regression

Algorithm: Logistic Regression

Goal: Classify patients (disease: Yes/No) (0: No Disease, 1: Disease Present)

Steps:

- Train/Test split
- Fit Logistic Regression model
- Evaluate using accuracy & confusion matrix
- Baseline model for comparison.

Model Training - Random Forest

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Algorithm: Random Forest Classifier

Features: Ensemble of multiple decision trees.

Steps:

- Fit model with 100 trees
- Evaluate accuracy & confusion matrix
- Visualize feature importance
- Gave higher accuracy than Logistic Regression.

Results & Evaluation

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Evaluation Metrics:

- Accuracy Score
- Confusion Matrix
- Precision, Recall, F1-Score

Random Forest outperformed Logistic Regression.

Important features: Cholesterol, Age, Blood Pressure.

Deployment & User Prediction

Saved model & scaler using Joblib.

Created CSV template for user input.

Process for new data:

- Apply preprocessing (scaling, encoding).
- Predict using trained model.

Output: CSV with predictions (Disease/No Disease).

Conclusion

Successfully built an end-to-end ML project.

Learnings:

- Data preprocessing & EDA
- Training & evaluating ML models
- Random Forest gave better performance
- Deployment for real-world predictions

Demonstrates ML in healthcare risk prediction.

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GitHub link:
https://github.com/AbdulRehman448

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Thank You !