TSP- AI ML Fundamentals (Capstone Project)

HEART DISEASE PREDICTION

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OUTLINE

- **Problem Statement** (Should not include solution)

- **Proposed System/Solution**

- **Algorithm & Deployment**

- **GitHub Link**

- **Project Demo(photos / videos)**

- **Conclusion**

- **Future Scope**

- **References**

Problem Statement

■ Cardiovascular diseases (CVD), including heart attacks, are a leading cause of death worldwide.

■ The World Health Organization estimates that four out of five CVD deaths are due to heart attacks.

■ The goal is to develop a predictive model to identify individuals at risk of CVD using logistic regression.

Proposed Solution

- Use logistic regression, a statistical method, to predict the likelihood of individuals developing CVD.

- Gather relevant data such as medical history, lifestyle factors, and demographic information.

- Train the logistic regression model on the collected data to learn patterns and relationships.

- Evaluate the model's performance using metrics like accuracy, precision, recall, and F1-score.

Algorithm & Deployment

- STEP 1: **DATA PREPARATION**:
  Create dataset with features, target variable for heart disease. Handle missing values, encode categorical variables.

- STEP 2: **FEATURE SCALING:**
  Standardize numerical features of logistic regression with uniform sale

- STEP 3: **DATASET SPLITTING:**
  Split dataset into features(X) and target variable(Y). Divide into training/ testing sets for evaluation.

- STEP 4: **MODEL TRAINING:**
  Instantiate, train logistic regression model on training data to predict heart disease likelihood.

- STEP 5: **MODEL EVALUATION:**
  The trained model's performance on testing data is evaluated using metrics like accuracy, precision, recall, FI-score and ROC-AUC curve.

- STEP 6:   **<u>INTERPRETATION:</u>**

  Interpret coefficients in logistic regression to understand features' impact on heart disease risk prediction accuracy.

- STEP 7:   **<u>PREDICTION AND RISK ASSESSMENT:</u>**

  Utilize logistic regression model to forecast heart disease risk in new patients; calculate individual risk using predicted probabilities.

- STEP 8:   **<u>RATIO CALCULATION:</u>**

  Analyze predicted probabilities to categories patients with high risk of cardiovascular disease for targeted intervention.

- STEP 9:   **<u>DEPLOYMENT AND INTEGRATION:</u>**

  Access by healthcare professionals to aid in the diagnosis and treatment of patients at risk for heart disease.

- STEP 10:   **<u>MONITORING AND MAINTANCES:</u>**

  Regularly assess model performance, update with new data, and retain to enhance accuracy and reliability in predictions.

GitHub Link

https://github.com/au422621105001/Heart-Disease-Prediction.git
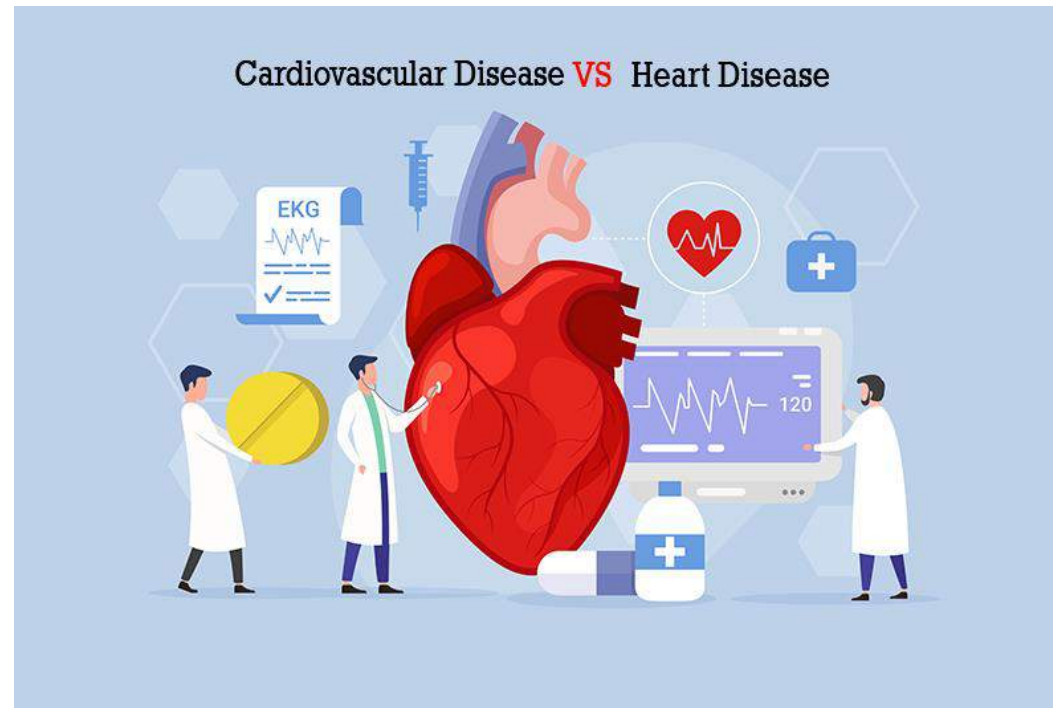
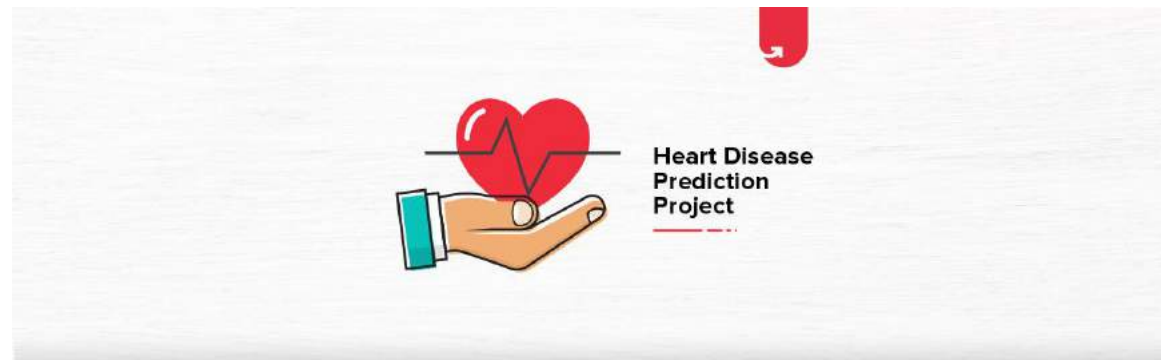# Project Demo(Recorded Video)

Heart_Disease_Prediction - Colaboratory - NM project.mp4

https://drive.google.com/file/d/1H6EBB6eQHboQP0CqyBKRYuSGzXHW0467/view?usp=sharing

Heart Disease
Prediction
Project

Conclusion

- The logistic regression model provides a valuable tool for predicting the risk of cardiovascular diseases.

- By identifying individuals at higher risk, healthcare providers can intervene early with preventive measures and treatments, potentially reducing the incidence of heart attacks and related deaths.

Future Scope

- Enhance the model by incorporating more features and data sources for better predictive accuracy.

- Explore other machine learning algorithms to compare and improve prediction performance.

- Continuously update the model with new data and research findings to improve its effectiveness over time.

- Expand the application of predictive analytics to other areas of healthcare for early detection and prevention of various diseases.

References

https://colab.research.google.com/drive/1m9f3Li99DW5qI6SrqI1hvfiNFVG3gj6f?usp=sharing

https://drive.google.com/file/d/1CEqI-OEexf9p02M5vCC1RDLXibHYE9Xz/view?usp=drive_link

1. Project Github link, RamarBose , 2024

2. Project video recorded link (youtube/github), RamarBose , 2024

3. Project PPT & Report github link, RamarBose , 2024

THANK YOU