Project: Predicting Mutual Fund Investments

Using Machine Learning to Forecast Investment Patterns

Wagma Aslam
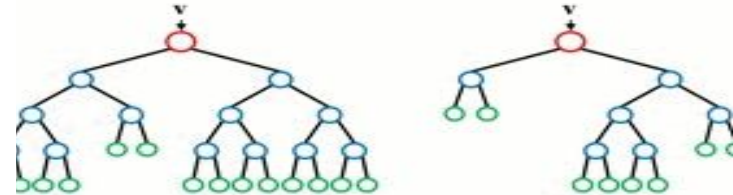# 2024-MSDS-13

Presented To: Dr. Awais

Introduction

This project utilizes a Random Forest Regressor to predict mutual fund investment levels.

The model identifies key financial attributes and predicts investment patterns, providing actionable insights for better strategies.

Problem Statement

→ **To develop a machine learning model that predicts mutual fund investments based on financial profiles.**

→ **The model leverages demographic and financial attributes to forecast investments and uncover actionable insights.**

Questions Addressed.

- What demographic or financial attributes strongly influence mutual fund investments?
- How accurately can the model forecast mutual fund investment levels?
- Are there specific combinations of financial behaviors that lead to higher investments?
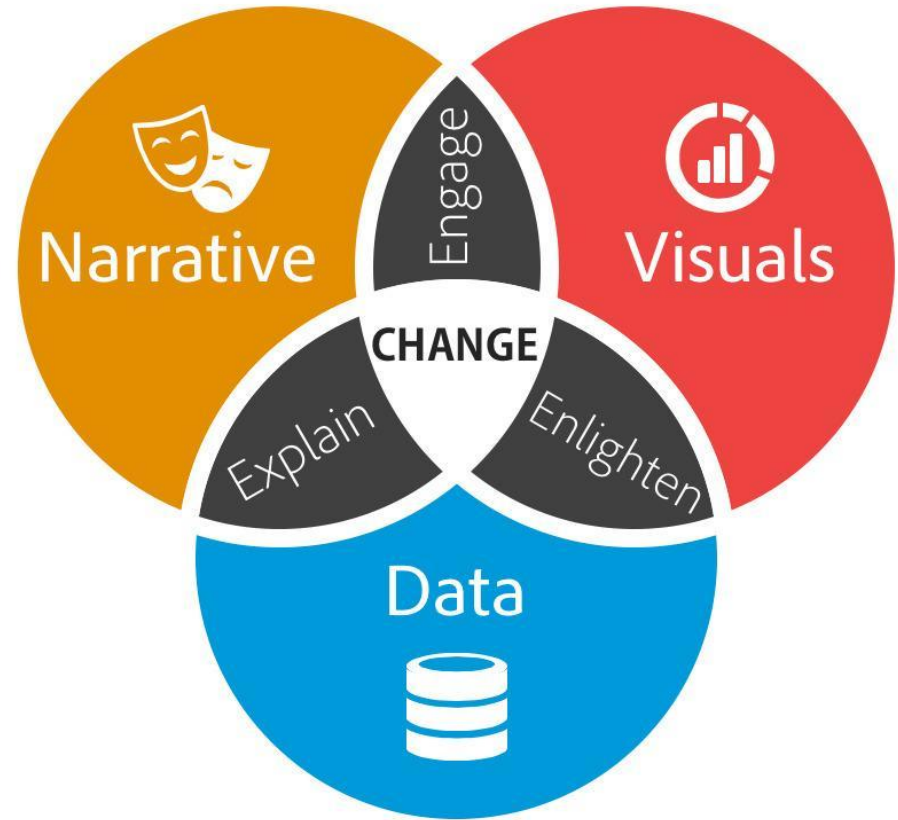
kaggle

DataSet

➔ From Kaggle

➔ The dataset contains 24 attributes, including:"

- Mutual Funds (Target)
- Equity Market
- Fixed Deposits
- Demographics (Gender, Age)

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Data Wrangling

- Removing duplicates
- Handling missing values
- Renaming columns
- Joining columns
- Dropping irrelevant columns
- Encoding categorical variable
- Splitting data

Model

- Model: Random Forest Regressor
- Key Aspects:
- ❖ Feature importance analysis to identify influential attributes.
- ❖ Model evaluation using Mean Squared Error (MSE) and R-squared (R^2).
- ❖ Predictions visualized with scatter plots.
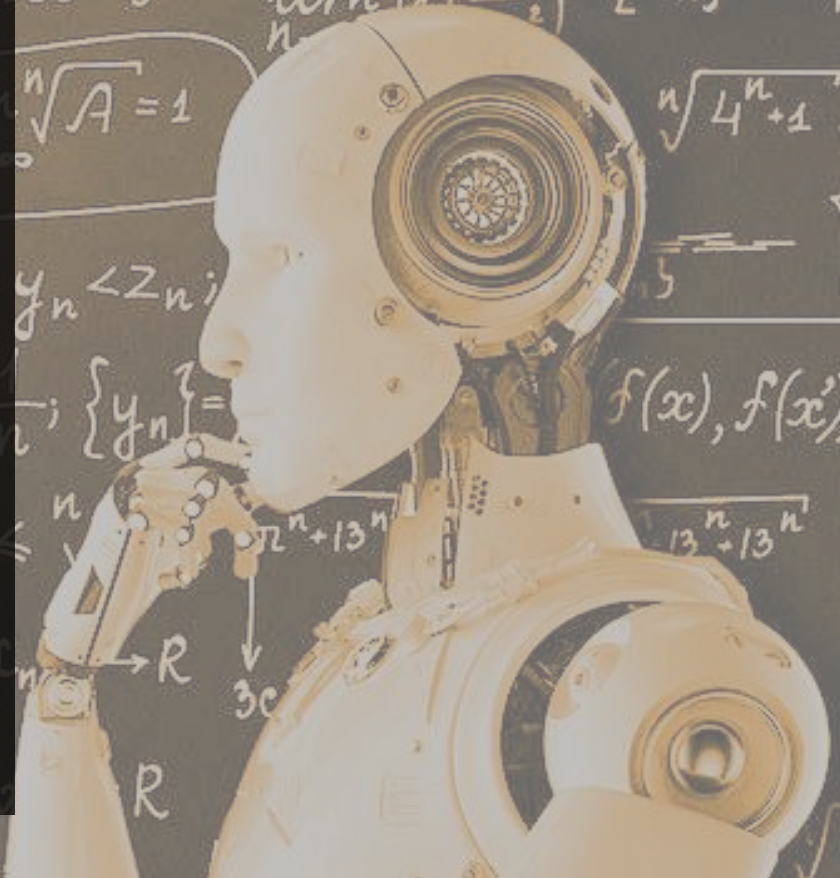
Answers

1. Key factors influencing investments identified using feature importance analysis.
2. Prediction accuracy evaluated using MSE and R^2 metrics.
3. Patterns observed through scatter plots of actual vs. predicted values.
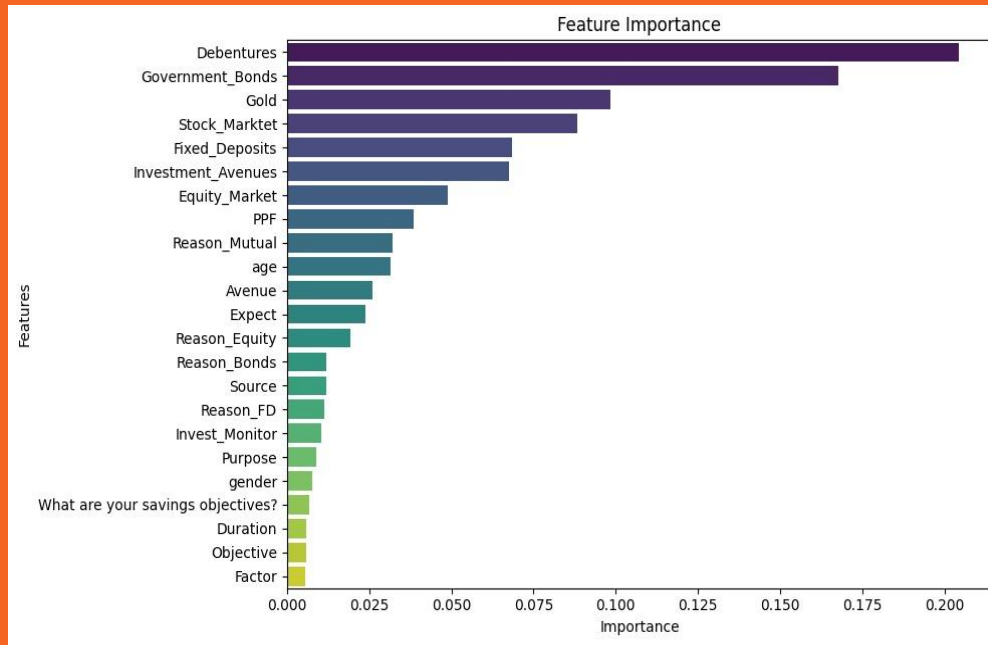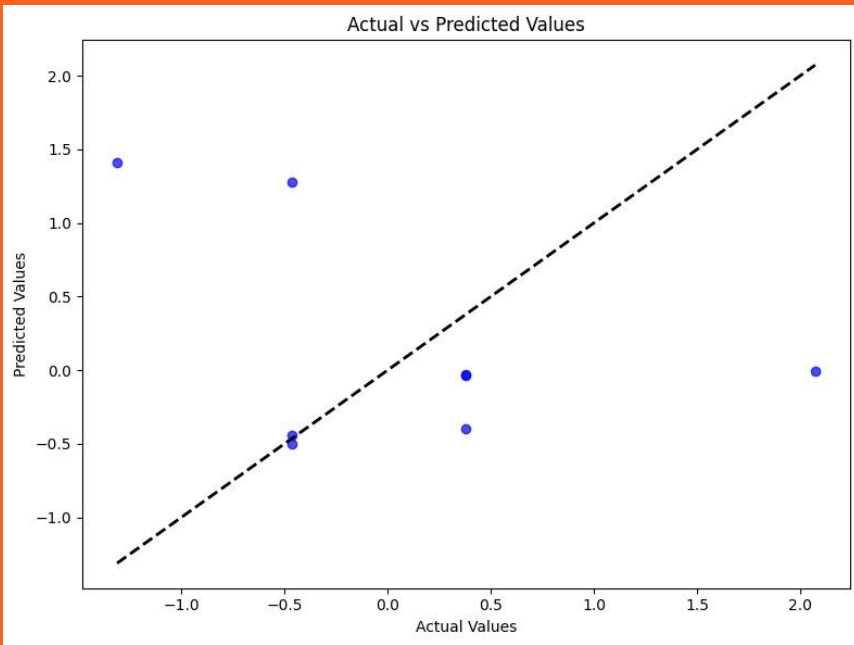
Mean Squared Error: 1.966279069767442
R-squared Score: -1.2261265822784808

Conclusion

- The project successfully predicts mutual fund investments, with actionable insights into key predictors.
- The Random Forest model provides reliable forecasts, empowering better investment strategies and decision-making

THANK YOU