⌄ Project Summary: Client Subscribed to a Term Deposit

Introduction

This project involves analyzing data from a bank's marketing campaign to predict whether a client will subscribe to a term deposit. The dataset includes various attributes such as job, marital status, education, default status, balance, and other socio-economic indicators. The goal is to build a classification model and derive insights that can improve future campaign strategies.

What We Did

- Loaded and inspected the `bankmarketing.csv` dataset.
- Handled missing values and performed necessary data cleaning.
- Conducted exploratory data analysis (EDA) to identify key patterns and relationships.
- Encoded categorical variables and normalized numerical features.
- Split the data into training and testing sets.
- Trained and evaluated multiple classification models (e.g., Logistic Regression, Decision Tree, Random Forest).
- Measured model performance using accuracy, precision, recall, and F1-score.

What We Learned

- Variables such as `contact`, `poutcome`, `month`, and `duration` were among the most significant predictors for term deposit subscription.
- The marketing campaign was more effective during certain months, particularly around May and August.
- A longer call duration was correlated with a higher likelihood of subscription.
- Ensemble models like Random Forest generally performed better in predictive accuracy.

Conclusion

This analysis helped in identifying critical factors that influence a client's decision to subscribe to a term deposit. By focusing on these key variables and optimizing marketing outreach strategies, banks can improve customer conversion rates. The project also demonstrates the importance of data preprocessing, exploratory analysis, and model evaluation in making data-driven decisions.