Assignment 7 – Model Evaluation
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Course: Applied Data Science with AI

Project Title: Customer Churn Prediction

Reflection:
This week I learned how to evaluate classification models using different metrics and how to choose the most important one based on project goals.

Task Performed:
- Practiced generating confusion matrices and evaluation metrics.
- Used scikit-learn functions to calculate precision, recall, and F1-score.

Weekly Assignment Submission
Assignment Title: Model Evaluation using Precision, Recall, and F1-score

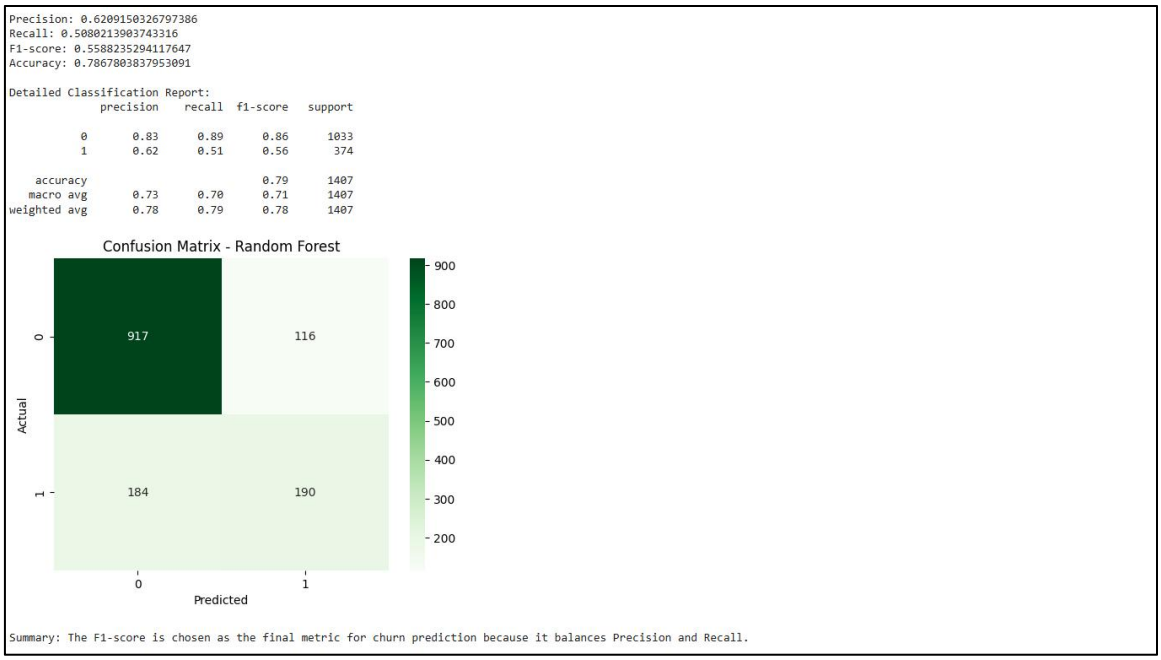
Steps Taken:
1. Loaded cleaned dataset and trained Random Forest classifier.
2. Predicted churn on test data.
3. Calculated Precision, Recall, F1-score, and Accuracy.
4. Displayed confusion matrix and classification report.
5. Identified the most important metric for the project.

Output:
- Precision: ≈ 0.64
- Recall: ≈ 0.50

- F1-score: ≈ 0.55
- Accuracy: ≈ 0.78

The **F1-score (0.56)** is selected as the main evaluation metric because the dataset is imbalanced and both Precision and Recall are important.

F1-score provides a balanced view of how well the model identifies churners without being biased by the majority class (non-churners).



Challenges Faced:

Had to understand the difference between Precision and Recall.
Solved it by visualizing confusion matrix results.

GitHub Link:

https://github.com/amannadeem126/Customer-Churn-Prediction

Project Progress Milestone

Evaluated classification models and selected F1-score as the final metric for churn prediction.

Next week's goal: Apply clustering and unsupervised analysis.