Customer Churn Prediction - Project Summary

Business Objective

The goal was to build a predictive model that accurately identifies customers at risk of churning, enabling the business to take preemptive actions to retain them. The emphasis was placed on maximizing recall to capture as many true churners as possible - aligning with the business need to reduce loss.

Approach & Methodology

- Explored and cleaned a real-world customer dataset with notable class imbalance

- Applied a Random Forest classifier to balance performance and interpretability

- Prioritized recall over precision, accepting false positives in favor of capturing true churners

- Tuned model thresholds and applied sensitivity analysis to evaluate trade-offs

Model Explainability

- Leveraged feature importance from Random Forest to interpret model decisions

- Identified key churn drivers (e.g., engagement frequency, subscription age)

- Communicated these insights to align model outcomes with business intuition and customer understanding

Results & Impact

- Achieved high recall to support early intervention strategies

- Delivered a ranked list of churn risks for targeted marketing or customer service outreach

- Translated technical outputs into actionable business recommendations

Key Learnings

- Modeling churn is not just about accuracy - it's about understanding behavior

- Interpretability builds trust and bridges the gap between technical output and business decisions

- A model is only valuable when it supports real-world actions