

Credit Card User Churn Prediction

Context: Advanced Machine Learning project focused on predicting customer churn in the credit card industry.

Objective: The goal was to build predictive models that help identify customers most likely to leave, enabling proactive retention strategies.

Approach:

- Performed extensive data preprocessing: handling missing values, scaling numerical features, encoding categorical variables.
- Conducted exploratory data analysis to understand correlations and key churn drivers.
- Trained multiple algorithms including Logistic Regression, Decision Trees, Random Forest, and Gradient Boosting (XGBoost).
- Applied hyperparameter tuning with GridSearchCV to optimize model performance.
- Evaluated models using Accuracy, Precision, Recall, F1-Score, and ROC-AUC metrics.

Tools & Technologies: Python, Pandas, Scikit-learn, Matplotlib, Seaborn, Google Colab.

Results: The best model (XGBoost) achieved an AUC of ~0.85 with balanced precision and recall, successfully identifying high-risk churn segments.

Business Value: Provided financial institutions with actionable insights on customer churn, helping to prioritize retention campaigns and reduce revenue loss.