***Credit Risk Model Project***

**Description:** This Credit Risk Modeling project, conducted as part of FTEC 6334 Financial Applications of Machine Learning at UTD, focuses on predicting the probability of default using a subset of the Kaggle American Express dataset. The project involved data preprocessing, model development using XGBoost and neural networks, and optimization through grid search to identify the best model based on AUC score and variance.

**Key Features:**

* Data preprocessing and cleaning on a subset of the Kaggle American Express dataset.
* Development and comparison of XGBoost and neural network models.
* Implementation of grid search for hyperparameter tuning.
* Selection of the Neural Network model based on AUC score (0.9327) and variance (0.000273).
* Formulation of strategies to balance revenue maximization and default rate minimization.

**Conclusion:** The project successfully demonstrates the application of machine learning techniques in financial risk assessment. The final Neural Network model, chosen for its superior AUC score, provides a robust tool for predicting defaults. This model serves as a valuable asset for financial institutions seeking to optimize risk management strategies while maintaining profitability.