CS3111 - Introduction to Machine Learning

Semester 4 - Mini Project

Individual Contribution

210173T - GALLAGE D.

Paper: Predicting Credit Risk Model Stability in Home Credit Using LightGBM Model

Overall Task Overview:

The task involved participating in a Kaggle competition focused on predicting credit risk model stability in Home Credit using the LightGBM model. The competition aimed to develop predictive models capable of assessing the stability of credit risk models over time, thus improving lending practices and financial inclusion for underserved populations.

Personal Contribution:

- ***Feature Engineering:***
  Played a key role in feature engineering, particularly in data cleaning and encoding. Implemented effective data cleaning techniques to handle missing values, outliers, and inconsistencies in the dataset. Additionally, contributed to encoding categorical variables to convert them into numerical format for modeling purposes. These efforts were essential in preparing the dataset for predictive modeling and improving the quality of the features used in the analysis.

- ***Model Evaluation:***
  Led the model evaluation phase, focusing on analyzing the performance of the predictive models using AUC and stability scoring analysis. Conducted comprehensive evaluations of model performance using metrics such as AUC-ROC to assess discriminative power and stability scores to measure the consistency of model predictions over time. Analyzed the results to identify the strengths and weaknesses of the models and provide insights for model improvement.

- ***Report Paper Creation:***
  Contributed significantly to the creation of the report paper, specifically in drafting the Abstract, Introduction, and Background sections. Crafted a concise and informative abstract summarizing the research objectives, methods, and key findings. Developed the introduction and background sections to provide context and rationale for the study, highlighting the importance of credit risk prediction and the significance of model stability in lending practices.

Overall, my contributions in feature engineering, model evaluation, and report paper creation were integral to the success of the research project. These efforts contributed to advancing our understanding of credit risk prediction and model stability, ultimately enhancing lending practices and financial inclusion in the Home Credit context.