Initial Project Plan

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Project Topic :

Predictive analysis of credit card approval by machine learning algorithms.

Research Question :

To identify the most effective machine learning model for predicting the likelihood that new credit card applicants will be approved or denied by banks.

Objective :

The main objective of this research project is to utilize advanced data science techniques to enhance the understanding and effectiveness of credit card approval procedures. As a reaction to the ever-changing financial environment and the growing importance of machine learning, the project aims to tackle the inherent problems with traditional credit scoring models. The goal is to determine which three machine learning models are more effective in predicting credit card approval decisions by comparing their predictive abilities. This analytical inspection is critical for optimizing decision-making frameworks in financial organizations.

Dataset :

The study takes a dataset that includes a wide range of variables, including real, integer, and category features and is focused around credit card applications. The UCI Machine Learning Repository is the source of it. It offers an extensive and representative sample for examining credit card approval, with a total of 690 instances and 15 features. A careful commitment to data privacy is seen in the anonymization of attribute names and values, which is applied to maintain confidentiality. The existence of missing values must be noted as it is a frequent issue that needs to be carefully taken into account while preprocessing and analyzing exploratory data. Although the names of the attributes have been anonymized, the blog link supplied provides a concise summary of each feature.

Dataset Link : https://archive.ics.uci.edu/dataset/27/credit+approval

Blog Link : https://rstudio-pubs-static.s3.amazonaws.com/73039_9946de135c0a49daa7a0a9eda4a67a72.html

Background of the Topic :

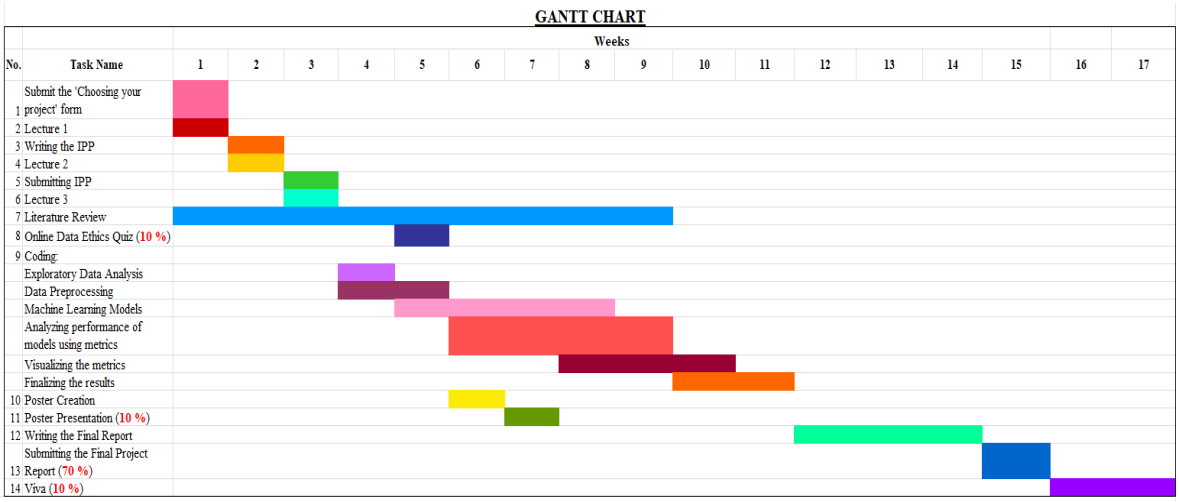
Using supervised learning methods, Therese et al. (2022) investigate credit card approval in a work presented at the 2022 International Conference on Smart Technologies and Systems for Next Generation Computing (ICSTSN). The study emphasizes the remarkable accuracy of

the Decision Tree algorithm, which reaches 98.13%. In order to improve communication between banks and potential clients, the paper also suggests a useful application: creating a website with FLASK Python modules.

Zhao et al. (2022) examine credit card acceptance predictions using logistic regression, linear support vector classification (linear SVC), and naïve bayes classifier in the paper given at the 2022 International Conference on Machine Learning and Knowledge Engineering (MLKE). Noticeably, Linear SVC is the most successful model; it performs better than the others, scoring the greatest percentages in both Accuracy Rate (88.48%) and Balanced Accuracy (89.09%).

Having a better knowledge of how various machine learning models work when determining credit card approvals is made possible by these insights. As I continue this project study, they are giving me advice on how to enhance and modify my methodology and approach.

Project Plan:



Reference :

Therese, M.J., Devi, A., Gurulakshmi, R., Sandhya, R. and Dharanyadevi, P. (2022). Credit Card Assent Using Supervised Learning. *2022 International Conference on Smart Technologies and Systems for Next Generation Computing (ICSTSN)*. doi:https://doi.org/10.1109/icstsn53084.2022.9761307.

Zhao, Y. (2022). Credit Card Approval Predictions Using Logistic Regression, Linear SVM and Naïve Bayes Classifier. *2022 International Conference on Machine Learning and Knowledge Engineering (MLKE)*. doi:https://doi.org/10.1109/mlke55170.2022.00047.