**PROJECT 2**

**TOPIC PROPOSAL**

**Title:** LOAN APPROVAL PREDICTION

**Project Team:** Team 2 (Aswin Balaji Thippa Ramesh, Abhilasha Singh, Lixing Pan)

**Research Topic:** Our primary objective is to analyze how various applicant and loan-related variables influence loan approval outcomes. We plan to conduct an exploratory data analysis (EDA) on applicant profiles, which include variables such as credit score, annual income, employment status, debt-to-income ratio, and prior payment history. Alongside these variables, loan-specific details such as interest rate, loan amount, and risk score are examined. By identifying patterns and correlations, we hope to clarify how financial behaviors affect loan approval and credit risk.

We will also build a machine learning model to predict loan approval based on critical financial variables, particularly credit score, allowing us to explore the predictive power of these metrics.

**SMART Question(s):**

The following SMART (Specific, Measurable, Achievable, Relevant, Time-bound) questions guide our analysis and model development:

1. What are the strongest predictors of loan approval or rejection?
2. How does debt-to-income ratio impact loan approval, interest rates, and risk scores?
3. What are the financial and demographic profiles of high-risk versus low-risk applicants?
4. How does credit score impact interest rates, loan approval, and loan amount?
5. What is the relationship between loan purpose and repayment behavior, and how does it affect risk?

These questions cover a broad range of critical insights, from understanding loan approval determinants to exploring risk factors associated with different applicant profiles and loan purposes. Analyzing these questions can inform decisions on risk management, loan structuring, and credit

**Source of Data Set(s) :** The dataset is sourced from Kaggle website (<https://www.kaggle.com/datasets/lorenzozoppelletto/financial-risk-for-loan-approval>).

**Dataset Details:**The dataset used in this project comprises over 20001 observations and includes 36 variables.

**Git Hub Repository**: <https://github.com/AswinBalajiTR/Loan_Approval_Prediction>

This project will provide an in-depth analysis of the factors influencing loan approval, helping to create a predictive model based on credit score and other relevant metrics. By addressing the identified research questions and implementing an ML model, this project will offer insights to improve loan approval accuracy and aid in effective risk management.