**Predicting Credit Card Defaulters: A Machine Learning Approach**

**Introduction:**

Credit card defaults pose a significant financial burden for both individuals and issuing institutions. By predicting the likelihood of default, financial institutions can mitigate risk, make informed lending decisions, and offer targeted credit card products. This project proposes utilizing machine learning techniques to build a model for predicting credit card defaults.

**Problem Statement:**

This project aims to develop a machine learning model capable of predicting whether a credit card holder is likely to default on their future payments. This will be achieved by analysing historical data on credit card transactions and account information.

**Proposed Methodologies:**

* **Data Acquisition**

We will acquire a historical dataset of credit card transactions and account information containing information relevant to default risk, such as: Demographic data, Credit history and Transactional behaviour

* **Data Preprocessing**

The raw data will undergo preprocessing to ensure its quality and consistency for analysis which will include Handling missing values, Outlier treatment, and Normalization/scaling.

* **Feature Engineering**

We will generate additional features potentially relevant to default risk, such as Debt-to-income ratio, Payment history patterns, Spending trend changes.

* **Model Selection and Evaluation**

We will work on various machine learning models for their predictive capabilities which can include Logistic Regression, Decision Trees/Random Forest, Additional Potential Models. Later we will evaluate its performance by using different metrics.

**Related Work:**

Existing research has explored credit card default prediction using similar models like Logistic Regression, Decision Trees, and Random Forests. Our project will differentiate itself by:

* **Focusing on a specific demographic or user group:** Targeting a specific segment (e.g., students, young professionals) for a more focused and potentially more accurate model.
* **Presenting findings in a clear and accessible manner:** Aiming to communicate our project and its outcomes in a way that is understandable to a broad audience, including stakeholders not necessarily familiar with machine learning.

**Expected Outcomes**

This project is expected to deliver:

* A functional machine learning model capable of predicting credit card defaults.
* Insights into the factors most relevant to identifying default risk.
* A clear and concise report documenting the project methodology, findings, and limitations.

**Conclusion**

Predicting credit card defaults using machine learning offers a valuable tool for financial institutions to manage risk and make informed lending decisions. This project contributes to this field by proposing a data-driven approach to address this critical challenge. We are confident that this project will provide valuable insights and contribute to the field of credit risk management