# BRSM: Project Proposal

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## Project Proposal: Analysis of Customer Behavior for Premium App Subscription Prediction

### Introduction

The landscape of financial technology (FinTech) is ever-changing, with companies continuously innovating to improve user experience and expand their customer base. A prominent FinTech company has recently launched a mobile application with both free and premium versions, offering basic features in the free version and more advanced features in the premium. In an attempt to convert free version users to premium, the company has decided to offer temporary access to premium features and has collected data on user behavior during this period.

### Objectives

The primary objective of this research is to predict which customers are likely to purchase the premium version of the app. By identifying these users, the company can target them with offers, thus optimizing advertisement costs and increasing revenue. The project will focus on:

1. Identifying patterns in user behavior that correlate with the likelihood of purchasing the premium service.

2. Determining the efficacy of offering temporary premium features in converting users to the paid version.

3. Establishing a predictive model that can anticipate a user's willingness to pay for the premium version.

# Data Description

The dataset provided by the company contains the following variables for each user:

- User ID

- Timestamp of the first app open

- Day of the week

- Hour of the day

- Age

- List of screens visited

- Number of screens visited

- Interaction with a mini-game

- Use of a premium feature (during the free trial)

- Enrollment status in the premium version

- Enrollment date in the premium version (if applicable)

- Liked feature interaction

# Methodology

## Data Preparation

Using Python and its libraries (Numpy, Pandas, Matplotlib, and Seaborn), we will clean and preprocess the data, handling missing values, and encoding categorical variables where necessary.

## Exploratory Data Analysis (EDA)

We will perform an EDA to understand the distribution of variables and the relationship between different features and the likelihood of a user enrolling in the premium version.

### Statistical Analysis

Correlation analysis and hypothesis testing will be performed to identify significant predictors of premium subscription uptake.

### Predictive Modeling

Machine Learning algorithms, such as Logistic Regression, Decision Trees, and Random Forests, will be used to develop a predictive model. The model will be trained, tested, and validated using appropriate subsets of the dataset.

### Model Evaluation

The models' performance will be evaluated using metrics such as accuracy, precision, recall, F1 score, and the ROC-AUC curve.

### Insights and Strategy Development

We will derive insights from the model's predictions and suggest strategies for targeted offers to potential premium customers.

## Expected Outcomes

The analysis is expected to provide:

1. Clear insights into the behavioral patterns of users who are likely to convert to the premium version.

2. Identification of key features that influence a user's decision to purchase the premium version.

3. A reliable predictive model that the company can use to tailor its marketing strategies to individual users.

## Conclusion

This project aims to deliver actionable insights that will enable the FinTech company to increase its premium user base efficiently. By leveraging the power of data analytics and machine learning, the company will be in a position to make informed decisions, personalize user experience, and optimize marketing expenditures.