**AIML PROJECT REPORT**

**Personal finance and budgeting machine learning model concept**

**Model Name**: FinBudget

Objective: Help users manage their income, expenses, and savings by predicting future expenses, identifying areas for cost reduction, and providing personalized budgeting recommendations.

**Data Sets**:

1. User Transaction Data: Collect user's financial transaction history, including income, expenses, and savings, through bank statements, budgeting apps, or manual input.

2. Expense Categories: Categorize expenses into groups like housing, transportation, food, entertainment, etc.

3. Economic Indicators: Incorporate external data like inflation rates, interest rates, and economic trends to account for market fluctuations.

**Algorithms**:

1. Expense Prediction: Use a Recurrent Neural Network (RNN) or Long Short-Term Memory (LSTM) network to predict future expenses based on historical data and economic indicators.

2. Clustering: Apply K-Means or Hierarchical Clustering to group users with similar financial behaviors and provide peer-to-peer budgeting insights.

3. Classification: Utilize Decision Trees or Random Forest to categorize expenses into needs (housing, utilities) and wants (entertainment, hobbies).

4. Regression: Employ Linear or Polynomial Regression to identify areas for cost reduction and optimize budget allocation.

5. Recommendation System: Implement a Collaborative Filtering or Content-Based Filtering algorithm to suggest personalized budgeting recommendations.

**Problem Statement:**

Design a machine learning model that can help users manage their finances effectively by:

1. Predicting future expenses based on historical spending patterns and economic indicators.

2. Identifying areas for cost reduction and optimizing budget allocation.

3. Providing personalized savings recommendations.

4. Categorizing expenses into needs and wants.

5. Detecting unusual spending behavior and alerting users to potential financial anomalies.

**Solution:**

FinBudget Model

A hybrid machine learning model that combines the strengths of:

1. Time Series Forecasting (e.g., ARIMA, LSTM) to predict future expenses.

2. Clustering (e.g., K-Means) to identify expense patterns and areas for cost reduction.

3. Classification (e.g., Decision Trees) to categorize expenses into needs and wants.

4. Regression (e.g., Linear Regression) to optimize budget allocation and provide savings recommendations.

5. Anomaly Detection (e.g., Isolation Forest) to identify unusual spending behavior.

**Team Details:**

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