# BudgetWise: AI-based Expense Forecasting Tool


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Created with Pi

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# 1. Introduction

A smart personal finance system designed to analyze, forecast, and optimize user spending patterns.

Leverages machine learning and deep learning models to provide personalized budget recommendations.

Built as a Streamlit web application for real-time interaction and insights.

1.

# 2. Problems

Managing personal finances manually is tedious and error-prone, leaving users unaware of their spending patterns and financial control.

### Lack of Predictive Tools

The absence of predictive tools makes it difficult to forecast future expenses and create intelligent, data-driven budgets.

# 3. Objectives

Automate expense tracking and category-wise analysis.

1

Forecast monthly and quarterly spending using ML/DL models.

2

Generate actionable insights and savings recommendations.

3

Provide an interactive dashboard for visualization.

4

Enable scalability via modular design.

# 4. Methodology

### Data Collection

User uploads transaction CSV (bank/UPI/wallet data).

### Preprocessing

Clean data → categorize merchants → handle missing values.

### EDA

Visualize spending trends, patterns, and category-wise breakdowns.

### Modeling

Train baseline (Prophet, ARIMA) and advanced (LSTM, XGBoost) models.

### Prediction

Forecast future expenses and compare models.

### Dashboard

Interactive Streamlit app for visualization and budget recommendations.

# 5. Tech Stack

1

**Python (3.9+) – Core backend and ML logic**

- **Libraries**

pandas, numpy, matplotlib, seaborn, scikit-learn, tensorflow, prophet, xgboost

2

**Frontend**

Streamlit dashboard

3

**Version Control**

GitHub

4

**Deployment**

Streamlit/Docker

# 6. Insights & Outcomes

- Identified top spending categories and seasonal patterns.
- Forecasted future expenses with high accuracy using Prophet and LSTM.
- Suggested personalized saving strategies (e.g., reduce dining spend by 10%).
- Demonstrated how AI can enhance financial literacy and planning.
- Future Scope: Real-time anomaly detection & multi-user budgeting API.

GitHub repository: [GitHub Link]
Thank You!

# Thank You