

SmartSpend

AI-Powered Personal Finance Assistant

Project Plan Presentation (PPP)

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Problem Domain

- Many people struggle with managing their finances effectively
- They overspend in certain categories without realizing it
- Existing budgeting apps require too much manual input
- Generic advice doesn't adapt to individual behavior
- Financial stress is a leading cause of anxiety

Goal: Use machine learning to learn from spending patterns and provide personalized, adaptive budgeting guidance

Proposed Solution

SmartSpend

- Analyzes spending data using ML to identify problem areas
- Generates personalized budgets based on actual behavior
- Provides actionable savings recommendations
- Tracks progress toward financial goals
- Alerts users when approaching budget limits

Features and Requirements

Feature	Requirements
1. User Authentication	Secure sign up/login
2. Transaction Input	Manual entry, Import/upload data
3. Transaction Categorization	Auto-categorize using ML
4. Spending Visualization	Category breakdowns, Time period view
5. Budget Generation	ML-generated personalized budgets

Features and Requirements (cont.)

Feature	Requirements
6. Budget Adaptation	Budgets adapt based on new data
7. Savings Recommendations	3+ actionable suggestions, Personalized
8. Goal Setting	Create and manage financial goals
9. Progress Tracking	Track goals, Visualize trends
10. Alerts & Notifications	Budget limit warnings

Total: 10 features, 14 requirements

Architecture

Client Side:

- Web Application (React)
- Mobile App (Flutter)

Server Side (via REST API):

- Server: FastAPI (Python) + ML Pipeline (Scikit-learn, pandas)
- Database: PostgreSQL
- Deployment: Docker containers

Data Model:

- User → Transactions → Budgets → Goals

Sprint Plan

Sprint 1 (Weeks 4-8)

- Week 4: Project setup (Docker, database) + React/FastAPI foundation
- Week 5: User authentication + Transaction input
- Week 6: Import functionality + ML categorization model
- Week 7: Spending visualization + Dashboard UI
- Week 8: Testing, polish & Sprint 1 Presentation

Sprint Plan (cont.)

Sprint 2 (Weeks 9-15)

- Week 9: Budget generation ML model
- Week 10: Budget adaptation system
- Week 11: Savings recommendations engine
- Week 12: Goal setting & progress tracking
- Week 13: Alerts & notifications system
- Week 14: Flutter mobile app development & integration
- Week 15: Testing, deployment, Final Presentation (4/27, 4/29)

Learning with AI

Topic 1: Sports Betting Analytics

- **Why:** Understand the math and statistics behind odds, expected value, and data-driven decision making
- **How:** Use AI as tutors, build Python scripts to simulate and analyze outcomes

Topic 2: Stock Market Analysis

- **Why:** Learn fundamental and technical analysis for informed investing decisions
- **How:** Use AI to break down financial concepts, write scripts to pull and visualize stock data

Summary

- **Project:** SmartSpend — ML-powered personal finance assistant
- **Platforms:** Web + Mobile
- **Tech Stack:** React, Flutter/Dart, FastAPI, PostgreSQL, Scikit-learn
- **Scope:** 10 features, 14 requirements across 2 sprints
- **Learning with AI:** Sports betting analytics & stock market analysis
- **GitHub:** <https://github.com/Jolteer/ase485-capstone-finance-ml>

Questions?