

WealthWise: A Comprehensive Personal Financial Management Platform

Lakshmi Priyanka Sreeramakavacham

State University of New York at Buffalo

lsreeram@buffalo.edu

Advised by: Dr. Shamsad Parvin

State University of Newyork at Buffalo

shamsadp@buffalo.edu

Abstract—Managing personal finances is an increasingly complex task due to the fragmented nature of financial information across multiple institutions and platforms. Wealthwise addresses this challenge by providing a centralized platform that aggregates financial data from multiple sources using the Plaid API. The platform offers a comprehensive financial dashboard that visualizes key metrics such as income, expenses, and net worth, empowering users to make informed decisions. An accounts page provides a consolidated view of all accounts, ensuring users have quick access to essential summaries.

Wealthwise also integrates cutting-edge AI features, including a chat assistant capable of answering user queries based on transaction data. This functionality is powered by a Retrieval-Augmented Generation (RAG) framework, where transaction data is stored in a vector database upon connection, enabling accurate and contextual responses. This paper outlines the design, implementation, and functionality of Wealthwise, highlighting its potential to revolutionize personal financial management. We also discuss limitations and propose directions for future enhancements.

I. INTRODUCTION

Personal finance management often involves navigating multiple banking platforms, investment accounts, and credit services. This fragmentation leads to inefficiencies, with users lacking a unified perspective on their financial health. Existing solutions often focus on specific areas such as budgeting or investment tracking but fail to provide a holistic view of finances.

Personal financial management has become increasingly important in the digital era, with users seeking tools to consolidate and analyze their financial data. WealthWise is designed to address this need by allowing users to connect multiple bank accounts, view transactional data in one place, and leverage AI assistance for insightful financial decisions.

II. IMPORTANCE OF THE PROBLEM

A centralized system that aggregates and analyzes financial data can significantly improve decision-making, reduce stress, and enhance financial literacy. By providing a comprehensive and real-time view of one's financial health, such a solution empowers users to plan effectively, identify inefficiencies, and achieve financial goals.

III. HISTORICAL BACKGROUND

Historically, financial management tools have evolved from manual bookkeeping to spreadsheet-based systems and, more recently, to mobile apps. However, these solutions often lack seamless data integration and advanced analytical capabilities. With advancements in APIs like Plaid and AI-driven tools, there is now an opportunity to redefine how personal finance is managed.

IV. SYSTEM OVERVIEW

WealthWise provides the following core functionalities:

- **Account Linking:** Users can connect their bank accounts using Plaid Link, ensuring secure and real-time data synchronization.
- **Manual Uploads:** For banks not supported by Plaid, users can upload transaction data files manually.
- **Unified Dashboard:** Users can view transactions from all connected accounts in a single interface.
- **AI Assistance:** Users can interact with an AI system to ask questions about their transactions, such as categorization, spending trends, or irregularities.

V. FEATURES AND FUNCTIONALITIES

A. Account Management

WealthWise enables users to add or remove accounts seamlessly. Plaid integration facilitates secure and efficient account linking, while manual uploads cater to unsupported banks.

Account specific analytics are also specified and user can add and delete accounts , refresh the transactions from the accounts and also view the overview of the accounts by category. Different types of accounts like depository, credit are supported. Quick stats about the account are also displayed.

B. Transaction Management

All transactional data is aggregated and displayed on a unified dashboard. Users can:

- Search and filter transactions by date, category, or amount.
- Categorize transactions to better understand spending patterns.
- Export transaction data for further analysis.

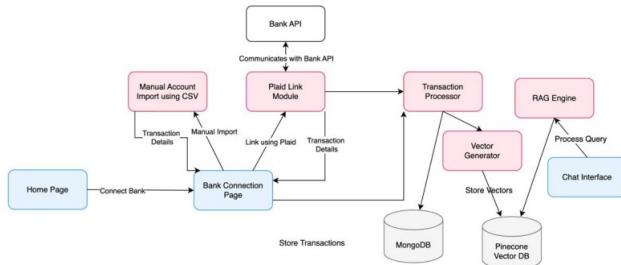
C. AI Assistance

WealthWise leverages AI to provide:

- **Q&A:** Answering user queries about specific transactions or account details.

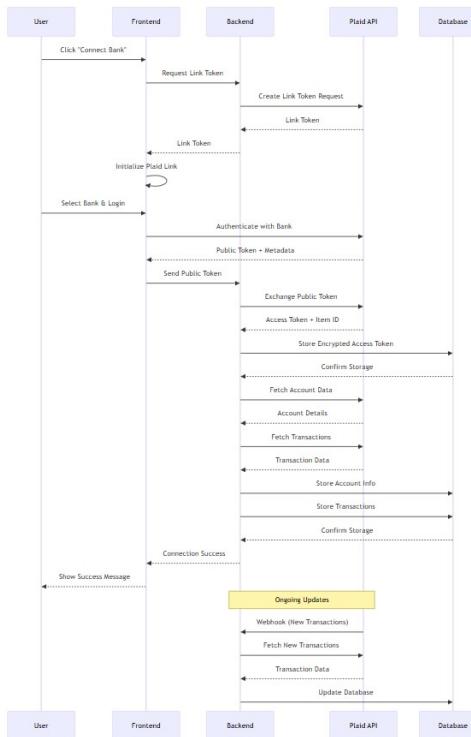
VI. SYSTEM ARCHITECTURE

The architecture of WealthWise consists of the following components:



- **Frontend Layer:** Built with React for web interface
- **Backend Layer:** A nodejs backend that handles transaction syncing with the mongo db and pinecone for RAG.
- **Data Layer:** A secure database for storing transaction data, user profiles, and insights.
- **Third-Party Integration:** Integration with Plaid API for account linking.

VII. PLAID INTEGRATION IN WEALTHWISE PLATFORM



The Plaid integration within WealthWise demonstrates a robust implementation of secure financial data aggregation,

incorporating multi-layered authentication and real-time synchronization capabilities. At its core, the integration flow begins with user initiation of a bank connection, triggering a sophisticated authentication sequence. The frontend application requests a link token from WealthWise's backend infrastructure, which interfaces with Plaid's API to establish the initial secure connection. This link token activates the Plaid Link interface, a secure iframe-based environment where users can select and authenticate with their financial institutions. The successful authentication generates a public token and associated metadata, which WealthWise's backend system exchanges with Plaid to obtain a permanent access token and unique item identifier. This permanent access token, essential for subsequent data retrieval operations, undergoes encryption using industry-standard protocols before secure storage in WealthWise's database infrastructure.

Following the establishment of secure connectivity, WealthWise implements a comprehensive data synchronization strategy. The platform initiates an extensive initial data retrieval operation, fetching historical transactions and account details to establish a foundational financial profile for the user. The ongoing maintenance phase leverages Plaid's webhook system, enabling real-time notifications for new transactions, balance modifications, and account status changes. This event-driven approach optimizes API utilization while maintaining data accuracy. The integration incorporates advanced error management protocols, addressing scenarios such as credential expiration and institutional service interruptions through automated reauthorization workflows. WealthWise's security framework encompasses token rotation mechanisms. The implementation reflects a careful balance between security requirements and user experience.

VIII. USER INTERFACES

The WealthWise application features four main interfaces, each designed to provide specific functionality while maintaining a cohesive user experience.

A. Dashboard Interface

The dashboard serves as the primary landing page, offering users a comprehensive overview of their financial status. It features a clean, grid-based layout with key financial metrics prominently displayed at the top. Users can view their total balance, monthly income, and expenses through easily readable cards. The central area contains interactive visualizations, including a spending trends graph and a category-wise expenditure pie chart. The dashboard also includes a quick-access sidebar for navigation and a notification center for important financial alerts.

B. Transactions Interface

The transactions page provides a detailed view of all financial activities through a sophisticated yet intuitive interface. At the top, users find a powerful search bar with advanced filtering options for date ranges, categories, and amounts. The main section displays a paginated list of transactions,

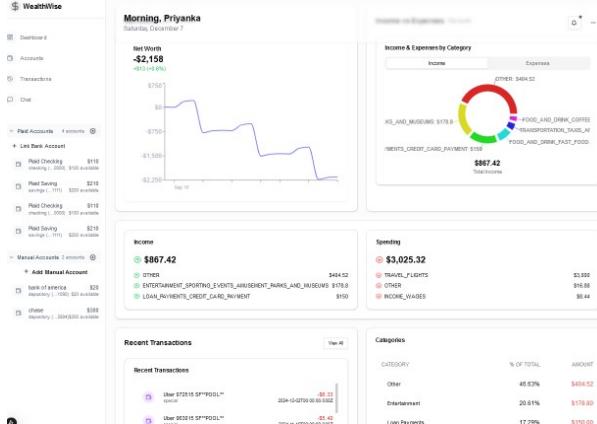


Fig. 1. WealthWise Unified Dashboard

each showing the date, merchant name, category, and amount. Users can interact with individual transactions for actions such as categorization, adding notes, or attaching receipts. The interface includes bulk action capabilities and smart sorting options to enhance transaction management.

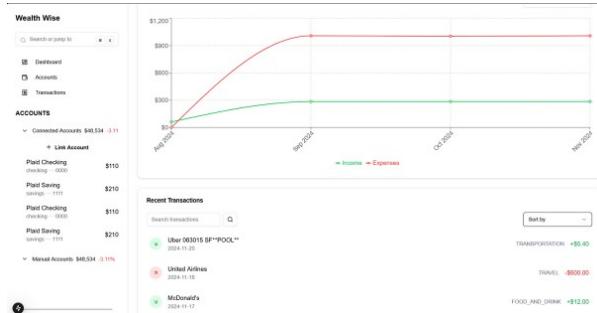


Fig. 2. Transactions

C. Accounts Interface

The accounts page presents users with a comprehensive view of their connected financial accounts. Each account is displayed as a card containing key information such as the current balance, account type, and institution name. The interface features a prominent "Add Account" button for easy account linking through Plaid integration. Users can view sync status indicators and access account-specific settings directly from this interface. The layout adapts dynamically based on the number of connected accounts while maintaining visual hierarchy.

D. AI Assistant Interface

The AI assistant interface provides a conversational interaction model for financial insights. The interface resembles a modern chat application with a message thread occupying the central area. Users can type natural language queries in a text input field at the bottom. The assistant's responses include both text and relevant visualizations, such as spending

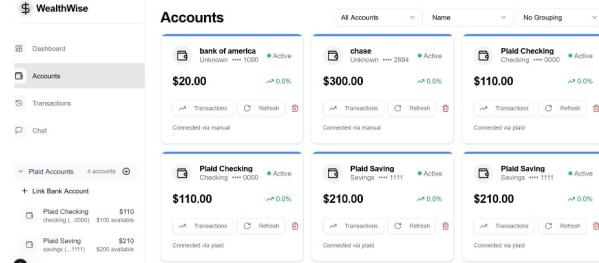


Fig. 3. accounts

breakdowns or trend analyses. The interface maintains context across conversations and provides suggested queries based on the user's financial profile.



Fig. 4. accounts

Each interface in WealthWise follows consistent design principles, including:

- Clean, minimalist layouts that prioritize content visibility
- Responsive design that adapts to different screen sizes
- Clear visual hierarchy guiding users to important information
- Consistent color coding for financial indicators
- Intuitive navigation between different sections
- Interactive elements for data exploration
- Real-time updates for financial data

The interfaces work in harmony to provide a seamless user experience, allowing users to easily navigate between different aspects of their financial management while maintaining context and continuity.

IX. CONCLUSION AND FUTURE WORK

WealthWise provides a robust platform for personal financial management by consolidating accounts and empowering users with AI-driven insights. Future enhancements include:

- Advanced AI capabilities for predictive analytics.
- Multi-currency support for international users.

Here is the bibliography entry for the WealthWise project GitHub repository:

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