

Vivekanand Education Society's Institute of Technology



Department of Computer Engineering

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Project Synopsis (2024-25)

‘ FinChores - Manage Life, Master Finances. ’

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Abstract

Effective personal financial management is crucial for future financial security. This research presents a novel system that employs machine learning algorithms to forecast user expenses and offer investment recommendations. By addressing the challenges of traditional financial management, our system incorporates Naive-Bayes, Linear Regression and Decision Tree algorithms to recommend savings and investments based on income data. The model, trained on historical spending patterns, provides real-time expense forecasts and identifies spending trends.

Introduction:

Mastering personal finance is essential for achieving long-term financial stability and reaching individual goals. Traditional budgeting methods often lack the proactive capabilities needed to stay ahead in a dynamic financial landscape. This research introduces a cutting-edge machine learning-based system designed to transform personal finance management. By leveraging Naive Bayes, Linear Regression, and Decision Tree algorithms, our system provides a comprehensive solution for tracking expenses, forecasting future spending, and delivering personalized investment recommendations.

Our approach aims to equip individuals with actionable insights into their spending patterns. By analyzing historical financial data, the system offers accurate expense forecasts, empowering users to make informed budgeting decisions. Additionally, the system provides customized investment advice based on individual financial profiles, helping users enhance their wealth growth potential.

The following sections will detail the methodology, development of the machine learning models, and evaluation of the system's performance, demonstrating how advanced analytics can revolutionize personal finance management.

Problem Statement:

Modern individuals grapple with the complexities of managing personal finances, often leading to financial stress and instability. Traditional financial management tools frequently fall short in providing comprehensive solutions that cater to the diverse needs of users. There exists a significant gap in the market for a platform that seamlessly integrates expense tracking, chore management, goal-based investment, and budgeting into a unified system.

Furthermore, financial literacy remains a critical challenge, with many individuals lacking the knowledge and skills to make informed financial decisions. The absence of user-friendly tools to educate and empower users to achieve their financial goals exacerbates this issue. Consequently, there is a pressing need for a platform that not only simplifies financial management but also promotes financial well-being through education and personalized guidance.

By addressing these challenges, a comprehensive personal finance management platform can revolutionize the way individuals approach their financial lives, enabling them to make informed choices, achieve financial goals, and ultimately enhance their overall quality of life.

Proposed Solution:

We intend to create a platform where users can efficiently manage their finances, household chores, and personal development. The website will offer tools to track expenses, manage chores, receive financial literacy education, monitor progress towards budgeting goals, split expenses, keep notes, manage receipts, transfer money, and receive notifications about their expenses or chores. Our proposed solution would include the following:

1. Login System:

- User Access: Users can access the platform through email to ensure a consistent user experience.
- Authentication: A secure authentication system using a username, password, and email verification.
- Credential Matching: The system collects user input for username, password, and email, and checks them against recorded values.
- Email Service Integration: Enable functionalities like email verification and password recovery through seamless communication with an email service provider.

2. Expense Tracking:

- Dashboard: Real-time overview of expenses and remaining budget.
- Expense Log: Detailed record of all expenses with categories (food, rent, utilities, etc.).
- Receipt Management: Upload and store receipts for easy reference and auditing.
- Spending Analysis: Visual representation of spending patterns over time (charts, graphs).

3. Budget Management:

- Budget Setup: Tools to set monthly or weekly budgets based on income and goals.
- Progress Tracking: Monitor spending against budget in real-time.
- Recommendations: Provides recommendations for budget adjustments based on predicted trends.

4. Household Chores Management:

- Chores List: Create and manage a list of household chores.
- Schedule: Set deadlines and reminders for chores.
- Progress Tracker: Track completion of chores and manage recurring tasks.

5. Goal-Based Investment Recommendations:

- Personalized Suggestions: Provide tailored investment product recommendations based on individual goals, risk tolerance, and financial literacy levels.
- Progress Tracking: Monitor progress towards investment goals with real-time updates.
- Model: Based on goals, our model will provide recommendations for investments.

6. Financial Literacy Lessons:

- Educational Modules: Access interactive lessons on budgeting, saving, investing, and managing debt.
- Quizzes and Tests: Assess understanding and retention of financial literacy topics.
- Progress Tracking: Monitor progress through educational modules and achieve milestones.

7. Expense Splitting:

- Group Expenses: Track shared expenses with roommates or friends.
- Split Calculations: Automatically calculate each person's share and keep a record of settlements.
- Payment Reminders: Remind users to pay or collect money from others.

8. Notes and Reminders:

- Note-taking: Create and organize notes related to expenses, chores, or personal reminders.
- To-do Lists: Maintain to-do lists for financial and personal tasks.

9. Money Transfer:

- Internal Transfers: Facilitate money transfers between users within the platform.

10. Notifications and Alerts:

- Custom Alerts: Customize notifications for expense tracking, chore reminders, and financial goals.
- Real-time Updates: Receive real-time notifications about important activities and deadlines.
- Email Integration: Get notifications through email.

11. Rewards and Achievement Badges:

- Gamified Incentives: Earn rewards and achievement badges for achieving savings goals, completing chores, and progressing through educational modules.

12. Additional Features:

- Referral Program: Encourage users to invite friends and earn rewards.
- Community Forum: Provide a platform for users to share financial tips and advice.
- Integration with Financial Institutions: Connect with bank accounts for automatic expense tracking.

Methodology / Block Diagram:

1. User Registration

- Sign Up/Login:
 - Implement a user registration system with email verification.
 - Allow users to sign in using their credentials or social media accounts.
- Profile Management:
 - Develop features for users to manage their profiles, including updating personal information and changing passwords.
- Security:
 - Ensure secure password storage (e.g., hashing passwords).

2. Expense Tracking

- Split Expenses:
 - Implement a module to allow users to split expenses with groups/friends.
 - Integrate a payment gateway for transferring money.
- Real-time Analysis:
 - Develop real-time graph and chart generation for expense analysis.
- Expense Management:
 - Add features for adding/deleting expenses by category.
 - Implement receipt upload and storage functionality.

3. Chores Management

- List Creation:
 - Allow users to create and manage lists of chores.
- Progress Tracking:
 - Implement progress tracking features to monitor completion of chores.

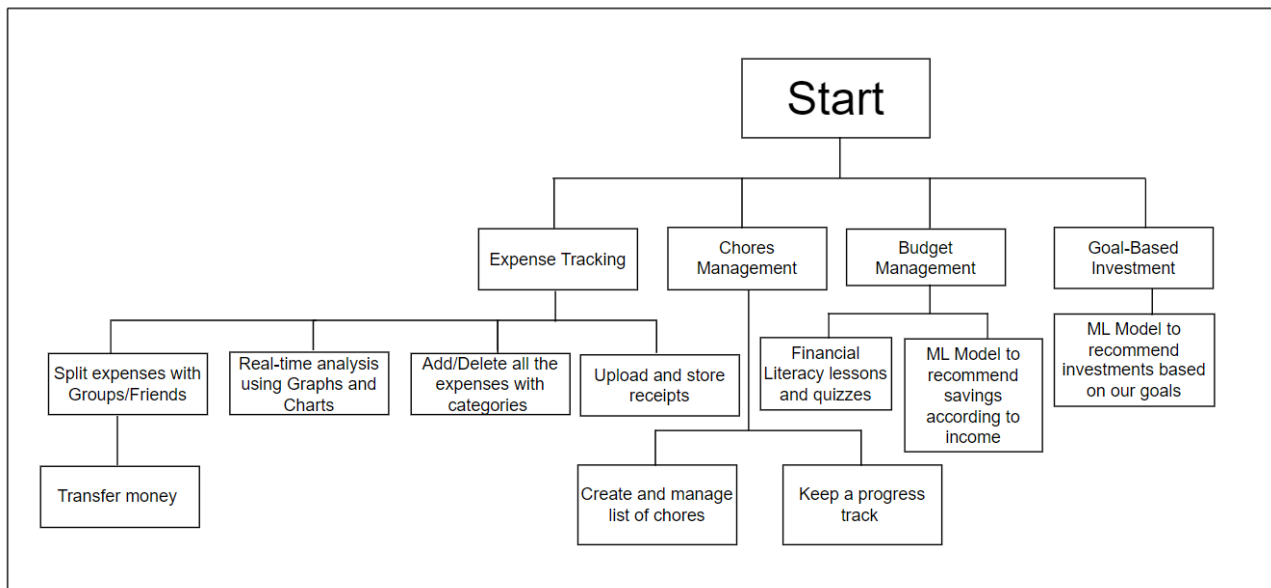
4. Goal-Based Investment

- ML Recommendations:
 - Develop a machine learning model to recommend investments based on user-defined goals.
- Upload Receipts:
 - Allow users to upload and store receipts for expenses.

5. Budget Management

- Financial Literacy:
 - Provide financial literacy lessons and quizzes to users.
- ML Savings Recommendations:
 - Develop a machine learning model to recommend savings plans based on user income.

Block Diagram:



Hardware , Software and tools Requirements:

Hardwares:

- Processor: Intel Pentium 4 or above.
- Hard Disk Utilization: 20 GB or above.
- Input Devices: Keyboard or Mouse.
- RAM:2GB or above.

Softwares:

- Angular - 17
- Spring Boot - 3.2.6
- SQL Server Management Studio - 19
- VS Code - 1.79

Proposed Evaluation Measures:

1. User Engagement:

- Number of registered users and active users over time:
- Track the growth in the number of registered users and monitor the active user count periodically (daily, weekly, monthly).

2. Frequency and duration of user logins:

- Measure how often users log into the expense tracker and the average duration of each session.

3. Interaction rates with expense tracking features:

- Monitor the frequency of users adding, editing, and deleting expenses.
- Track the usage of features like splitting expenses with groups/friends and real time analysis.

4. User Satisfaction:

4.1 Surveys or feedback forms:

- Collect user opinions on the expense tracker's usability, features, and overall experience through periodic surveys or feedback forms.

4.2. User ratings and reviews:

- Gather ratings and reviews for specific features such as expense tracking, split expenses, and receipt upload.

5. Expense Management:

5.1. Number of expenses tracked:

- Measure the total number of expenses added by users.

5.2. Categorization accuracy:

- Track the percentage of expenses correctly categorized by users.

5.3. Receipt uploads:

- Monitor the number of receipts uploaded and stored by users.

6. Real time analysis usage:

- Track the frequency of users accessing and using real time graphs and charts for expense analysis.

7. Feature Utilization:

7.1. Feature adoption rate:

- Measure the percentage of users utilizing key features like splitting expenses, uploading receipts, and generating expense reports.

7.2. Frequency of use:

- Track how often users engage with each key feature (e.g., daily use of expense tracking, monthly reports).

8. Security and Privacy:

8.1. Security incidents:

- Track the number and severity of security incidents related to the expense tracker.

8.2. User reports:

- Monitor and analyze user reports related to security or privacy concerns within the expense tracker.

By addressing these challenges, a comprehensive personal finance management platform can revolutionize the way individuals approach their financial lives, enabling them to make informed choices, achieve financial goals, and ultimately enhance their overall quality of life.

Conclusion:

The proposed platform represents a significant step towards comprehensive financial and lifestyle management. By seamlessly integrating expense tracking, chore management, investment planning, and financial education, it offers a holistic solution to meet the diverse needs of modern users. The platform's ability to empower individuals to make informed financial decisions, streamline daily tasks, and work towards their financial goals is a testament to its potential impact.

This integrated approach distinguishes the platform from traditional financial management tools by providing a more comprehensive and user-centric experience. The incorporation of machine learning algorithms to offer personalized recommendations further enhances the platform's value proposition.

Looking ahead, continuous development and refinement of the platform's features, coupled with robust user feedback mechanisms, will be essential to ensure its long-term success. By prioritizing user experience and staying at the forefront of financial technology trends, the platform has the potential to become a leading solution in the market.

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