

FKGAT: An AI Powered Financial Knowledge Gainer and Advanced Tracking System

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ABSTRACT

In day-to-day life, individual people are struggling to manage their financial tasks like expenditure tracking, saving plans, investments and budgeting, etc. Most of these tasks should be easier to manage for a growing person, Also individuals lack the knowledge to do these financial tasks by themselves. To help with these challenges, we designed an AI- Powered Financial learning and tracking application called FKGAT (Financial Knowledge Gainer and Advanced Tracker). With this application, individuals could mainly improve their financial literacy, while offering smart tools for tracking and controlling personal planning for their financial goals. The application lets individuals track their income, expenses, savings and financial objectives in an easy and understandable way. We have designed this application to provide personalised financial advice and knowledge to individuals, for this we have used Artificial Intelligence to provide those customised and more reasonable suggestions and helps with budgeting, and create financial roadmaps based on users' actions and spending patterns. The frontend of this project, which we used Flutter for, offers a smooth, fluid and responsive user interface. For Backend API developments, we have used FastAPI, and for authentication and database management, we have used Firebase. The AI elements are used via LLM-based services to provide intelligent financial advice. It would help people to make better financial decisions and increase their financial awareness by using AI-based guidance for learning and tracking tools. The project is mainly focused on keeping things simple, clear automation and easy accessibility for users. The developed application can help students, employees and everyone who wants to manage their financial life in a better and more sensible way.

Keywords — Artificial Intelligence, Financial Management, Expense Tracking, Budget Planning, Financial Knowledge, FastAPI, Flutter, Firebase, Personal Finance, AI-Based Recommendation System.

I. INTRODUCTION

Managing finance is a necessary thing in today's modern world. A lot of people and individuals have a hard time keeping track of their control over their costs, savings, budgeting, deciding their financial plan, and investments for a month or for a year. The lack of financial education and awareness on the topic of finance leads users to take less profitable financial decisions that may result in their future of poor financial stability. The Traditional financial management systems are felt to be hard to grasp, and applications may not recommend users in any personalised way. With the advantages and existence of Artificial Intelligence and the latest technological growth, General applications are getting smarter and more user-friendly for users. Systems where Artificial Intelligence is implemented can study more details about the user if provided, and provide beneficial advice for the betterment of the users in financial management. Some of these would help in the habits of users, such as spending habits, savings, to achieve or to monitor their financial goals in a simpler and easier way. The project, FKGAT (Financial Knowledge Gainer and Advanced Tracker), is developed to give both financial learning and financial tracking in one platform that would make the user understand the system easily. This application would help users manage revenue, expenses, savings and budgeting tasks. For this app, we have used Flutter for the frontend and FastAPI for the backend.

II. LITERATURE REVIEW

1. "Design and Development of an Expenses Tracker App using the Flutter Framework" by Clinton Laishram discusses the development of a mobile expense tracking application using Flutter. The study highlights cross-platform mobile development and efficient user interface design for personal finance applications.
2. "The Design of a Mobile App to Promote Young People's Digital Financial Literacy" by Yi Zhang focuses on improving financial awareness among young users through mobile learning applications. The paper emphasises the role of digital tools in promoting financial education.
3. "A Generative AI Roadmap for Financial Institutions" by Stiene Riemer and co-authors explores the use of generative AI in financial services. The study demonstrates how AI can enhance financial decision-making, automation, and user assistance.
4. "Conversational AI for Expense Monitoring and Report Generation" discusses the implementation of conversational AI systems for tracking user expenses.
5. "Personal Finance Tracker with AI-Based Expense Prediction" by M. Chandana and E. Manoj Vardhan Reddy presents an AI-enabled financial tracker

capable of predicting future expenses using historical spending data.

6. “AI-Driven Financial Assistant for Smart Expense Tracking” by Pawar Shubham and team proposes an intelligent assistant for expense management using AI techniques for personalised recommendations and automated analysis.
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III. PROBLEM STATEMENT

The problem in the recent generation is due to the rapid growth of technology and individual use online payment application which are digital money transfer in a flick of seconds, while physical handling money would teach people the value that holds and the way at which it could be managed so how money is digitalised, financial learning should also be digitalised and people need to know how to organize and manage, current financial application may not offer there users an intelligent advice, suggestion, financial recommendation instead current application focus on tracking expenses, users find it difficult and challenging to learn about investment planning, savings and budgeting. Furthermore, a lot of current systems are difficult to use and don't offer interactive learning assistance for raising financial literacy and are not specific to the user.

IV. OBJECTIVE OF THE STUDY

Now that money management has been digitalised, financial learning must also evolve to the next phase, to a digitalised phase, many students along with young individuals, need guidance on how to track and learn about the financial environment. Mainly, the objective is to develop an artificial intelligence financial application called FKGAT (Financial Knowledge Gainer and Advanced Tracker) that will provide all the necessary needs of the users, students, young individuals, by providing financial learning, expense tracker, financial management and an Artificial Intelligence-based personalised financial guide and recommendations and improving the organisation of money all in a single platform

1. To develop a smart financial tracking system for monitoring income, expenses, and savings.
2. To provide AI-based financial recommendations tailored to individual user needs.
3. To improve financial literacy by offering digital learning support for budgeting, savings, and investment planning.
4. To help users analyse spending patterns and make better financial decisions.
5. To integrate modern technologies such as Flutter, FastAPI, and Firebase into a single application.
6. To create a user-friendly platform that makes financial planning simple, interactive, and accessible for everyone.

V. EXISTING SYSTEM

The market holds powerful applications that work and help people in a very user-friendly way. The current financial systems have fundamental expense tracking and budgeting capabilities. The application allows users, students, and young individuals to enter their income and expenses manually, and systems may not provide financial guidance and personalised suggestions to improve users' decision-making capabilities. Some existing systems are complex way of interpreting detailed reports and analytics from users.

Traditional financial systems may not provide a friendly user interface, real-time financial insights, or budget analysis.

VI. SYSTEM ARCHITECTURE

Architecture for this project covers with Frontend with flutter that is the user interface which user interacts with. The interactions performed by the users will be performed using a backend server. Here, we have used FastAPI to process the request that we get from the users, perform financial analysis and communicates with the cloud infrastructure. We have used Fire store for a secure storage of users' financial records, while Artificial integrated modules will interact with both the database and perform analyses on transaction history and spending patterns to generate personalised financial insights. The processed results will be displayed in the dashboard on the homepage of the application.

Architecture ensures efficient data flow between the user interface, backend services, database, and AI engine, thereby improving scalability, security, and intelligent decision-making within the application.

TABLE 1
User module table

| User Module | Purpose |
|-----------------|-----------------------|
| Budget Tracker | Monitor expenses |
| AI Assistant | Financial suggestions |
| Learning Module | Financial education |
| Dashboard | Visual analysis |

VII. IMPLEMENTATION

The FKGAT (Financial Knowledge Gainer and Advanced Tracker) focuses on integrating financial management functionalities using Artificial intelligence in a mobile environment. The development process involved user-interface designing, budget monitoring, and financial analytics, followed by backend API creation for handling user requests and financial data processing. This application is designed as a cross-platform smartphone solution using Flutter, a framework, providing permissions to users to interact with expense trackers, savings, financial learning modules, etc., all of which have dedicated pages. Backend services were developed using FastAPI to work for a faster way to get and push request within seconds. The backend is the brain of the application that runs the entire application, connecting the frontend and database in one place. For database and authentication, we have used firebase a cloud

data storage and authentication provider. The Artificial Intelligence module runs using the backend and gets the result through an LLM API integration from another provider.

TABLE 2
Implementation Tools

| Tool | Purpose |
|----------|-----------------|
| Flutter | Mobile frontend |
| FastAPI | Backend API |
| Firebase | Database/Auth |
| Python | AI processing |

VIII. AI INTEGRATION FRAMEWORK

The proposed FKGAT system incorporates Artificial intelligence to provide intelligent financial guidance and personalised suggestions and recommendations for each user. These modules are the core intelligent component of the application, for users to receive financial suggestions, budgeting advice and very specific learning support. Instead of developing a customised machine learning model from scratch, the system utilises an external large language module (LLM) service integrated through a backend API. By using this approach, the complexity of the project could be reduced. The backend server communicated with the LLM service by sending the user’s inputs that they gave in the interface of the application, and the backend server will respond with the result provided by the external LLM service. This AI framework analyses user-provided data such as income, expenses, saving goals, and financial habits to generate a personalised response. This system can recommend a suitable savings plan. The major advantage of implementing an Artificial Intelligence service is that it will act as a real-time guide and assistant digitally. This AI-integrated module will also be used in roadmaps, personalised learning, and budget tracking. The advantage of using an artificial intelligence service is the scalability of the application; we could update and use any LLM modules that are available in the AI Market without requiring the creation of a specialised or separate model training or deployment.

TABLE 3
Implemented AI functions

| AI Function | LLM Usage |
|--------------------|-------------------------------|
| Financial Chat | User query response |
| Budget Advice | Personalized suggestions |
| Roadmap Generation | Financial planning |
| Learning Support | Financial concept explanation |

TABLE 4
AI capabilities

| AI Capability | Function in FKGAT |
|-----------------------|--|
| Query processing | Understanding user financial questions |
| Recommendation Engine | Suggest budgeting strategies |
| Financial Roadmap | Generate personalized plans |
| Learning support | Explain financial concepts |
| Conversational AI | Interactive financial guidance |

IX. RESULT AND DISCUSSION

The Proposed FKGAT (Financial Knowledge Gainer and advanced Tracker) application has been successfully implemented and tested according to the testing norms. The application demonstrates effective performance in managing personal financial records.

The user authentication module functioned and will always function properly using Firebase Authentication, conforming to secured registration and login functionalities. The AI integration modules, such as AI chat, AI roadmap generator, and budget tracker, all these modules generate and return meaningful outputs based on the specific requirements of the users.

The Application frontend was created using the Flutter framework that works based on dart program, that provides widget to create smooth and responsive frontend designs. As a result, the implementation of the project finds good betterment and growth to students, users, and individual youths. So, we have successfully combined financial tracking and financial learning to support young generations to have a better future in decision-making.

X. CONCLUSION

The development of FKGAT (Financial Knowledge Gainer and Advanced Tracker), an AI-powered financial application designed to help students, Individual youth, and other users gain knowledge about financial concepts to improve their decision-making abilities.

The proposed application successfully integrates financial tracking, financial budgeting, financial learning and AI-based guidance in a single user-friendly Application. In this application, some of the features use external LLM-based AI modules so that it can provide personalised financial suggestions and financial roadmap generation. The implementation shows that the results effectively support core functionalities. Such as expense tracking, budgeting, investment planning, and suggestions on investments for better financial stability in future.

Overall, FKGAT (Financial Knowledge Gainer and Advanced Tracker) demonstrate how modern technologies like Flutter, FastAPI, Firebase and LLM-based AI services are combined to create a smart and efficient financial budgeting, financial learning and financial tracking process of the application. With this study, we conclude that AI-enhanced financial applications could play an important role in improving the surroundings for users.

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