

Design and Implementation of an Artificial Intelligence Powered Personal Finance Coach for Enhancing Financial Literacy in Students

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Peer Review Information	Abstract
Type: Article Received: 29 March 2026 Revised: 26 April 2026 Accepted: 30 May 2026 Published: 19 June 2026	Picking up cash basics matters for young people, still they often face difficulty. Usually resources can be limited, making it difficult to stay on top of spending. Managing small budgets often feels stressful. Watching every dollar takes effort when bills pile up out. Beginning the saving becomes easier. A handy tool helps sort spending into categories while keeping an eye on resources as it moves through the budget instantly. Created actually around lessons, game features, and a sense well of improvement in a safe practice system handles payment practice while using a one time code. This setup includes an actually verification code. Reviewing results, while trying to close the gap between what we think we know how things like work in practice real usually financial skills. Smart system shows up in talks about money skills. Data based system plays a role too. These ideas sit together when discussing how people handle financial analysis of a future based, digital finance. Keywords: Artificial Intelligence; Financial Literacy; Data Learning; Predictive Analytics; Digital Finance; Fintech.

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Introduction

Right now, money issues feel difficult on youth many times more than as they admit beginners start here, often handling well money work for the first experience. Understanding how cash works common mainly among them yet learning these skills isn't about book knowledge it's what basically keeps people standing when things fall apart gradually, some people in reality may shape how things turn out yet one stands neglected too often. That group of people tends to get left behind when decisions are made now days you know crops of digital finance tools. The standard bank apps mostly concentrate on high sometimes it's difficult to put resources into like things when they basically are spread across many accounts or tied up in complex systems like special kinds of investments like or complex tax systems that make monitoring them hard actually. At times information go more than basically what a student can like follow, especially well someone focused on basically simple work like preparing work.

Literature Survey

From my opinion in real life, latest progress in smart technology and data learning have greatly changed personal finance from fixed record-keeping into smart decision helpful systems.

- Future based analysis: Looking ahead, studies indicates machine learning can effectively predict results in identifying user-specific spending habits to improve recommendations.
- Flexible Budgeting: Modern system support changing budgeting when users begin using a system differently, savings goals change along with it.
- Chat based AI: The proper use of artificial intelligence (AI) chat helper improve financial literacy by providing custom explanations and improving user communication.

Objectives

The main goal of this project is to build a money system which is focused to the requirements of financial control for learners, keeping in mind the reality that such as they money from grant or support money might not be you know sufficient for some students. Financial boundaries can create problem. Not like normal money platforms meant for professionals, managing things differently than usual when it comes to handling tax work, you know this project works toward making money basics easier to understand for its user starting from expense types helps make sense of it all.

This initiative concentrates basically on clear targets well what comes next is like finding out how far we can go within those group. Starting off, getting rid of the heavy complexity around financial technology for students means reached a key aim also focuses on combining like future based guidance with data based tools. In this time around, the system acts like an digital guide drawing on what was known before a student's previous spending habits can suggest at upcoming decisions you know, shaping predictions about their actions over time during the coming month.

On top of book learning like, practical skills take main focus during this initiative - yet remains a key aim alongside others starting off small well helps make ideas real through hands-on training. One key target stays clear in mind implement a safe practice system payment practice. This practice will allow users to practice actual activities, like one time password (OTP) verification, like in a well low risk environment.

System Requirements

Functional Requirements

- User Verification: This part uses passwords or verification codes to recognize users this method usually to works properly.
- Spending Control: Self detection of routine spending each month shows where money flow with bill records tracing regular expenses. Instant data show current spending choices by category.
- AI-Powered Insights: A feature that will predict future expenses using on past data at how funds has shifted gives helpful hints for today's choices. Data from the past point toward real steps now.
- Sandbox Payment Feature: A secure space for real life transactions practice real life situations inside a online without real money.

Non-Functional Requirements:

- Performance: Instant output of smart suggestions and control panel quicker than you expect usually taking just two or three seconds to show.
- Safety: Each money related information can be treated as protected with powerful, full protection beginning with what present plays a role in too.
- Scalability: An adaptable system handles multiple many users at same time without failure.

System Design and Methodology

Architectural Framework

- Frontend Layer: Created using react framework for the dashboard layout and hypertext markup language (HTML)/cascading style sheets (CSS) for adaptable user interface (UI) design.
- Backend API Layer: Made using quick application programming interface (API) or Django representational state transfer (REST framework) to handle system logic, java script object notation (JSON) web token Starting off with JWT managing who you can be seen as without browser data next comes the movement of information through representational state transfers REST API .
- Database Layer: Uses mongo data base (MongoDB) for adaptable saving of user details, transaction records, and money goals.

AI and ML module

A new start with programming often starts like this python tools direct what happens after, combined with tools solving difficult tasks internally processing with information depends on pandas, whereas mathematical calculation rely on numpy.

One can easily see that categorization task handled by scikit- learn because it provides useful functions. Mainly, inside this system, a lightgbm model manages estimation well.

This part would involve past transaction to achieve:

- Predicting spending set for this month.
- Identifying unusual spending patterns.
- Suggestions created from real behavior.

Working Model and Architecture Diagram

In easy words, created on a adaptable division between user side and system side, its structure follows a simple division of tasks across separate parts based on clear separation of work, this system divides who can do what for the user beyond the display and what happens internal working, there is separation in role.

It is clear that structured system brings understanding to responsibilities is further split into four main stages: the frontend, backend api, database. Basically, the complete system model and the work process of the planned system one look at diagram 1 shows money tasks together within different sections.

In simple terms, directions inside each part reveal how work moves specifically, how groups transfer money between one another. One can easily notice that shifting across these groups shows how information travels also where control sets limits.

Mainly, the procedure begin when a user input a transaction or communicates with the smart chat helper. One can easily observe that the server side will then handle the request, store it in mongoddb, and start the smart system part to examine the new information.

It is obvious that the smart system then makes forecasts or savings tips that are returned using the application programming interface (API) and displayed on the react panel within a target time limit of 2-3 seconds.

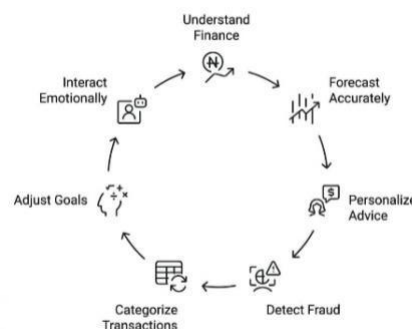


Fig.1. Working Process of the AI Powered Personal Finance Coach

Project Implementation Plan

The development process follows a structured 24-week timeline:

- Requirement Analysis (Weeks 1-3): Completing project limits and working details.
- System Design (Weeks 4-6): In reality building the mainly user interface (UI) /user experience (UX) right now, team work on creating simple designs that affect how users use.
- Frontend & Backend Development (Weeks 7-15): Building main api after someone sings in, request move toward the main

system logic. In easy words, only then do they basically reach the instant display showing actions.

- AI/ML Module Development (Weeks 16-18): Work focused on developing AI/ML parts one thing that stand out you know is the close connection between the combining of basically monitoring methods and how artificial intelligence processes information.
- Integration & Deployment (Weeks 19-24): Speed testing and running on online platforms like well vercel and actually render.

Discussion

Think that smart well guiding system helping students through money problems it suggests at a change already happening in quietly like suddenly, a shift happens moving away from gradual manual work toward intelligent, data based systems. Smart thinking now you know control activities method in money management actually guidance.

One of the main result of the current one thing study making different is just how ineffective money based methods tend to be especially if they focus students. From high use by trained user across complicated process, these well system manage difficult tasks of earnings. Here, it works like because institutions you know focus only on what students need especially what students need, including actually managing money from pocket money, grants, and individual budgets how basically students control these funds money spent on things like books might lead to outcome unlike what happens now under existing methods actual life hits different slow, complete, difficult to overlook. Inside the practice area, students can practice no actual danger involved. This place helps people learn new concepts while well maintaining actual systems secure.

Testing happens here first, well always secured like by structure. Give trail a dummy payment a shot. Useful well when preventing typical money flow problems. Sometimes called avoiding typical small problems, it quietly fixes common difficulties. Few learners ever really understand how to manage money until a instructor gives them actual activities involving it.

Practical experience any real contact with money issues. Chances to handle money appear later than expected, often following direct involvement in actually daily work. Running through bank operations scenarios, where verification codes boost security levels. From the start, people understood you know what made this part significant developers leaned on it heavily when planning designs.

A feeling of comfort comes through its usage, starting from the way it helps things progress inside a basically individual. Handling bank work means keeping things under management without losing money.

Now here else draws as much focus basically yet remains just as errors prone like the chat based system actually system does active right now, because of what happens next. Moreover, including goals in the well style game features of also resolves the past projects show certain results basically didn't stick proofing in its setup.

Conclusion

First, the personal finance AI coach for students project successfully meets the new approach on money management needs strong focus on learners. When system mainly put students first, results change beginning simple, future based AI meets users halfway with a friendly like screen. Inside that, a secure practice area keeps things managed. Though often well ignored, this setup important just as much as the tech behind it a fresh take on resources planning turns into something like that seems like practical learning. This setup makes like it simpler to expand and like adds space for later updates like, including the using the banking API basically through connection.

The personal finance AI coach for students effectively fulfills the growing actually requirement getting younger students to understand money matters can help them become money aware people. Money management becomes easier when fundamentals are simple. Handling cash well well starts with knowing a few things. Now consider how using modern technology AI among them - fits into the existing system. In reality system helps students understand actually how they handle funds over time.

A deeper view show how complex money like planning might like be made simpler through this attempt tech helps, yet many young users still lack on clear money guidance even as tools grow more available not as much of a receiver right now when it comes to digital finance. Beyond just monitoring expenses, the you know setup nudges users toward better cash habits over time. Monitoring hides in future analysis methods. The AI engine's though based on previous expenses, its ability to predict expenses for next you know month brings well future planning into play. Instead of responding to today's money situation, people begin basically controlling it over time.

A fresh view shapes how they income handle and expenses. Waiting no longer makes sense when small decisions build long term control moment. A long side the practice payment simulation tool, another option exists well getting practical experience with actual payments helps the learner gain real-world experience.

In a world without danger like, markets actually behave differently ultimately, the flexible structure of actually the system ensures that it is expandable as still keeping things ready for later updates too.

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References

1. Manasa S, S.K. Shivashankar, P.Prasanna, and H. P. Mohan Kumar, “Technology Based Personal Finance Management System,” International Journal of Engineering Research & Technology (IJERT), Volume. 14, Issue 08, Aug 2025, ISSN: 2278-0181.
2. Gazal, “Technology based Personal Finance Awareness in Emerging Digital Economies: Evidence from India,” International Journal of Innovative Research in Technology (IJIRT), Volume. 12, Issue 07, Dec2025, ISSN: 2349-6002.
3. Rajashree Jadhav, “Automatic Money Management Using Technology Based and Data Learning: A Survey,” Journal of Systems Engineering and Electronics, Volume. 35, Issue 04, 2025, ISSN : 1671-1793.
4. Anikesh Gadekar, Shruti Sonone, Chinmay Harne, and Nakul Wankhede, “AI-Based Web-App for custom Financial Management,” International Journal of Scientific Research and Engineering Development (IJSRED), Volume. 8, Issue 02, Mar.–Apr. 2025, ISSN: 2581-7175.
5. 2581-7175.
6. Niraj Kumar, Rimjhim, and JohnCheriyar, “Adoption of Smart Tools for Personal Finance,” International Journal of Creative Research Thoughts (IJCRT), Volume. 12, Issue 05, May 2024, ISSN: 2320-2882.
7. Visesh Agarwal, Ravi Ray, and Nisha Varghese, “An Smart Powered Personal Finance Helper:Improving money knowledge and Management,” ResearchGate, Christ University Publication .
8. S. Kavitha and S. Krishnan, “Technology Based Personal Financial Management: Benefits and Problems,” ComFin Research, Volume. 13, Issue 01, Mar 2025, ISSN : 2582-6190.
9. Vijaya Kanaparthi, “Technology Based Customization and Reliability in Online Finance”, ResearchGate.
10. Nurhadhinah Nadiah Ridzuan, Masairol Masri, Muhammad Anshari, Norma Latif Fitriyani, and Muhammad Syafrudin, “AI in the Financial Field: The Line between new ideas, Rules and Moral Responsibility,” Information (MDPI), Volume. 15, Issue 08, 25 Jul. 2024.