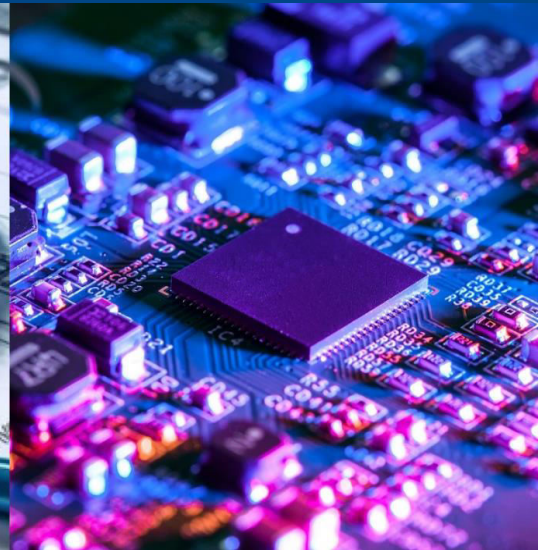
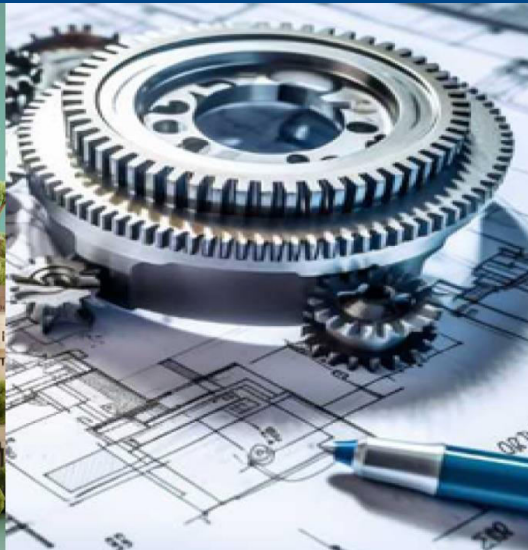
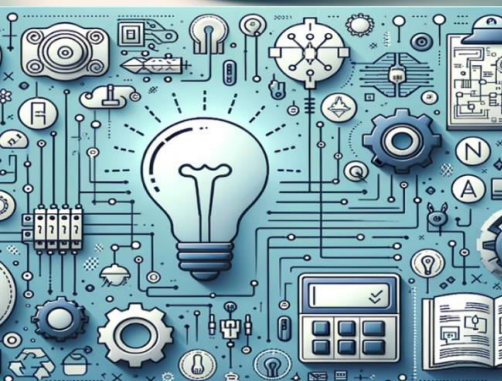




International Journal of Multidisciplinary Research in Science, Engineering and Technology

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)



Impact Factor: 9.864

Volume 9, Issue 6, June 2026



International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

Intelligent Expenses Tracker Using AI

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ABSTRACT: The **Intelligent Expenses Tracker System Using AI** is a smart financial management system designed to help users track, analyze, and optimize their daily expenses. Managing personal finances manually is often inefficient and error prone. This project uses Artificial Intelligence techniques to automatically categorize expenses, analyze spending patterns, and provide personalized financial insights. The system collects user transaction data and applies machine learning algorithms to classify expenses into categories such as food, travel, shopping, and bills. It also predicts future spending trends and provides suggestions for saving money. The proposed system improves financial awareness, reduces unnecessary expenses, and helps users achieve better budgeting.

I. INTRODUCTION

In today's digital era, managing personal expenses has become a challenging task due to increasing financial transactions and dynamic spending habits. Many users fail to maintain proper records of their daily expenses, leading to poor budgeting and financial imbalance. Traditional expense tracking methods, such as manual entry or basic applications, require significant effort and lack intelligent analysis, making them inefficient for modern financial management.

Advancement of **Artificial Intelligence (AI)**, especially **Natural Language Processing (NLP)**, it is now possible to develop smart systems that can understand and process textual data. NLP enables the system to analyze transaction descriptions, messages, and user inputs written in natural language. This allows automatic classification of expenses such as food, travel, shopping, and bills without manual categorization. By using NLP techniques, the system can extract meaningful information from raw text data and improve the accuracy of expense tracking.

The main objective of this project is to develop an Intelligent Expenses Tracker using AI and NLP that simplifies personal finance management. The system collects expense data, processes textual information using NLP, categorizes expenses automatically, and analyzes spending patterns. It also provides predictions and smart suggestions to help users reduce unnecessary expenses and improve savings. Thus, the proposed system offers an efficient, intelligent, and user-friendly solution for managing personal finances..

II. EXISTING SYSTEM

The existing systems for expense tracking mainly rely on traditional methods such as manual record keeping, spreadsheet management, or basic mobile applications. In these systems, users are required to manually enter their expenses and categorize them into predefined groups such as food, travel, and bills. Some applications provide simple visualization features like charts and summaries, but they lack intelligent automation and analysis capabilities.

Most of the current systems do not use advanced technologies like Artificial Intelligence or Natural Language Processing (NLP). They are unable to understand transaction descriptions or messages automatically. For example, if a user enters a text like "Dinner with friends," the system cannot identify it as a food expense unless manually categorized. This increases user effort and reduces efficiency in managing expenses.

Existing systems do not provide predictive analysis or personalized recommendations. They fail to analyze user spending behavior over time and cannot suggest ways to improve financial habits. As a result, users do not gain meaningful insights into their spending patterns, making it difficult to control expenses and plan budgets effectively.



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DISADVANTAGES:

- Time-consuming and requires continuous manual input.
- High chances of human errors in categorization.
- Inability to process natural language text data
- No predictive analysis of future expenses.

III. PROPOSED SYSTEM

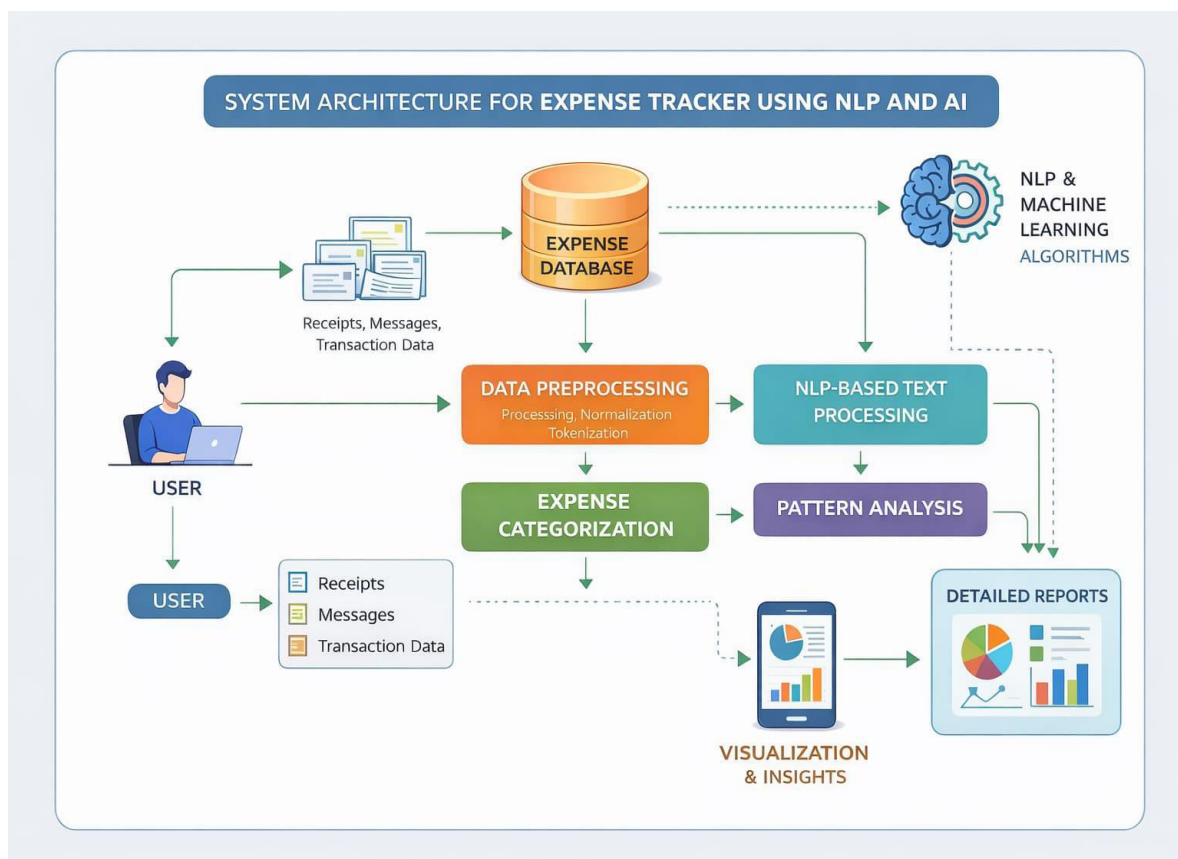
The proposed system introduces an intelligent expense tracking solution that leverages **Artificial Intelligence (AI)** and **Natural Language Processing (NLP)** to automate and enhance personal financial management. Unlike traditional systems, this approach minimizes manual effort by automatically processing and categorizing expense data based on textual inputs such as transaction descriptions, SMS alerts, and user entries.

The system utilizes NLP techniques to understand and extract meaningful information from unstructured text data. By applying machine learning algorithms, the system classifies expenses into predefined categories such as food, travel, shopping, and utilities. This automated categorization improves accuracy and reduces dependency on manual input. Additionally, the system continuously learns from user behaviour, thereby enhancing its performance over time.

ADVANTAGES:

- Automated expense tracking and categorization.
- Efficient processing of natural language text using NLP.
- Reduced manual effort and human errors.
- Accurate classification using machine learning models.

IV. SYSTEM ARCHITECTURE





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MODULES:

- **Dashboard**
- **AI Chatbot**
- **NLP-Based Text Processing**
- **Expense Categorization**
- **Prediction and Recommendation**

V.MODULE DESCRIPTIONS:

• **DASHBOARD:**

The **Dashboard** module is the central component of the Intelligent Expense Tracker using AI (Expense AI) system. It provides a comprehensive and real-time overview of the user's financial activities in a visually intuitive manner. This module acts as the main interface through which users can quickly understand their spending behavior and financial status.

The dashboard displays key financial metrics such as total expenses, daily and monthly spending, and overall financial trends. These values are dynamically updated based on the user's transaction data stored in the database. The system ensures real-time synchronization between the backend and frontend, allowing users to view the most recent financial information without delay.

Graphical representations such as line charts and summary cards are used to enhance data visualization. These elements help users easily identify patterns, trends, and fluctuations in their spending habits. For example, users can track their expense trajectory over time and recognize peak spending periods. This visual insight supports better financial planning and decision-making.

• **AI CHATBOT:**

The **AI Chat module** analyzes transaction history, expense categories, and spending patterns to generate personalized advice. For example, it can suggest reducing expenses in specific categories, provide alerts for unusual spending behavior, and recommend better budgeting strategies. This helps users improve financial discipline and manage their expenses more effectively.

The module is designed to be interactive and user-friendly, providing quick and accurate responses. It uses Natural Language Processing (NLP) techniques to understand user queries and deliver relevant outputs. The integration with the backend ensures that the AI has access to updated financial data, enabling real-time analysis and response generation.

Additionally, the module can assist users in forecasting future expenses based on past data trends. This predictive capability helps users plan their budgets and avoid financial difficulties. The AI Chat module also enhances user engagement by offering a conversational interface instead of traditional data input methods.

• **NLP-BASED VOICE TO TEXT PROCESSING:**

This module uses **Natural Language Processing (NLP)** techniques to analyze unstructured text data such as transaction descriptions, SMS alerts, and user inputs. It extracts important keywords and identifies the context of the transaction. Techniques such as tokenization, stemming, and keyword extraction are applied to convert raw text into structured data. This module enables the system to understand human language and interpret transaction details accurately, which is essential for automatic expense categorization.

• **EXPENSE CATEGORIZATION:**

In this module, machine learning algorithms are used to classify expenses into predefined categories such as food, travel, shopping, bills, and entertainment. The system uses processed textual data and extracted features to determine the appropriate category. Algorithms such as **Naive Bayes, Decision Trees, or Support Vector Machines** can be used for classification. The model is trained in historical data and continuously improves its accuracy over time. This module reduces manual effort and ensures efficient expense classification.



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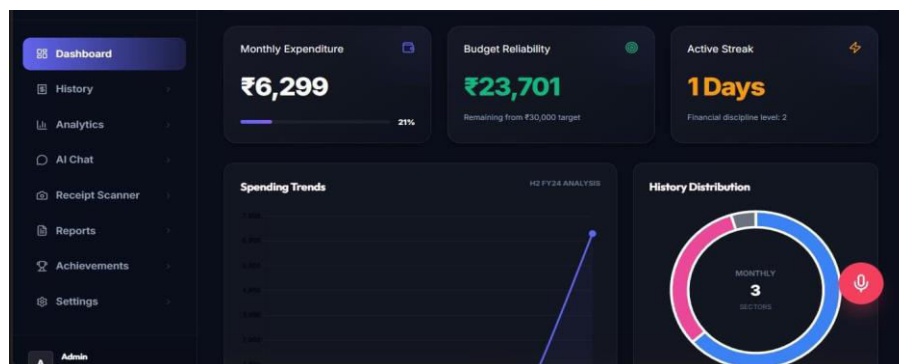
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• PREDICTION AND RECOMMENDATION:

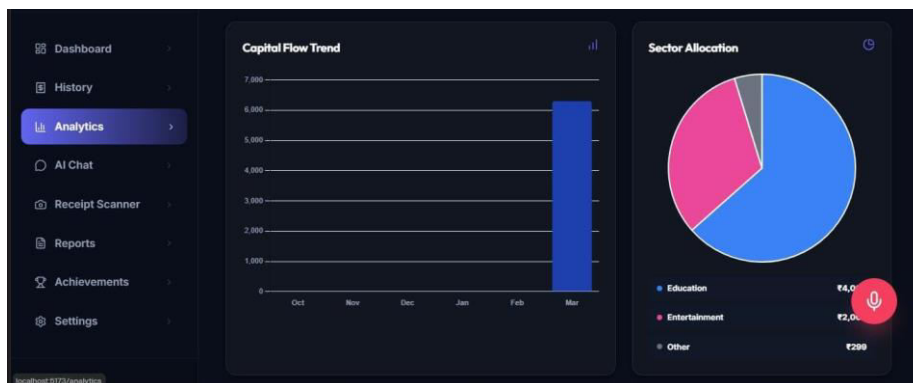
This module uses machine learning techniques to predict future expenses based on historical data. Time-series analysis and regression techniques can be applied to forecast upcoming expenses. Additionally, the system provides personalized recommendations such as reducing unnecessary spending, setting budget limits, and saving suggestions. **Alerts and notifications** are also generated to guide users in maintaining financial discipline.

VI. RESULTS

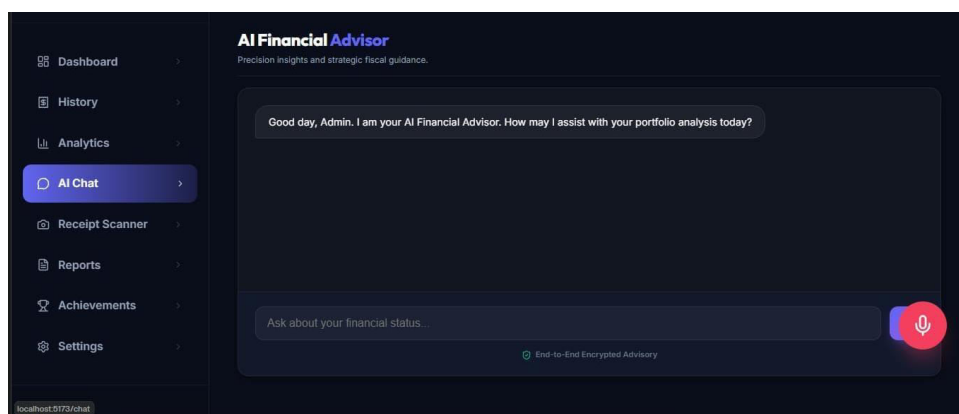
1. DASHBOARD



2. ANALYTICS



3. AI CHATBOX

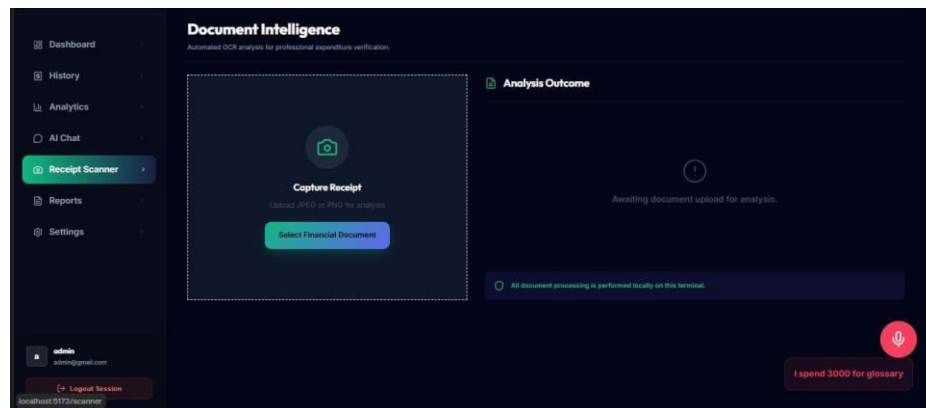




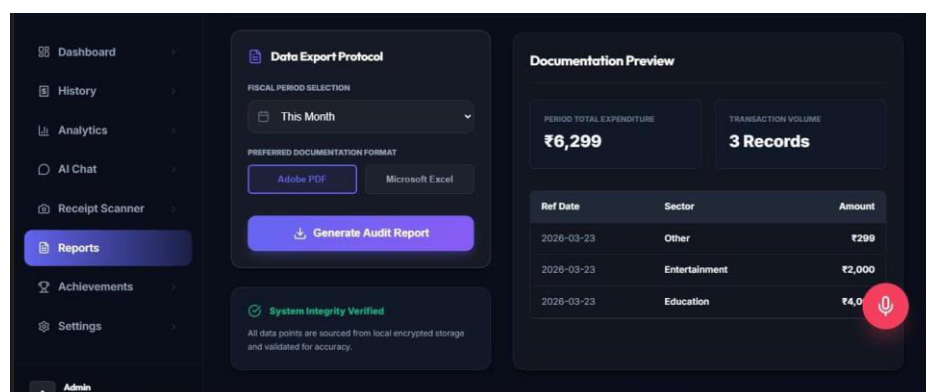
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4. RECEIPT SCANNER



5. REPORT GENERATION



VII. CONCLUSION

The Intelligent Expenses Tracker using Artificial Intelligence and Natural Language Processing (NLP) provides an efficient and automated solution for managing personal finances. The system successfully collects expense data from multiple sources and processes both structured and unstructured data using NLP techniques. By automatically categorizing expenses and analyzing spending patterns, it reduces manual effort and improves accuracy.

The integration of machine learning algorithms enables the system to learn from historical data and enhances its performance over time. The visualization of data through charts and reports helps users clearly understand their financial behavior. Additionally, the prediction and recommendation features assist users in making better financial decisions by identifying unnecessary expenses and suggesting effective budgeting strategies.

Overall, the proposed system demonstrates the effective use of AI and NLP in personal finance management. It offers a smart, user-friendly, and scalable solution that improves financial awareness and helps users achieve better control over their expenses. This system can be further enhanced and deployed as a real-time application for practical use in everyday financial management.

The AI-powered module enhances the system by offering personalized suggestions, predictive analysis, and smart financial guidance. Additionally, the report generation feature ensures proper documentation and supports financial auditing. The application also maintains data security and reliability, making it suitable for real-world usage.



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Overall, the project meets all its objectives by delivering a scalable and effective expense management system. It demonstrates how Artificial Intelligence can be applied in financial applications to improve usability, efficiency, and decision-making.

VIII. FUTURE ENHANCEMENTS

The Intelligent Expenses Tracker using Artificial Intelligence and Natural Language Processing (NLP) can be further enhanced in several ways to improve its performance and usability. In the future, the system can be integrated with bank APIs and UPI platforms to automatically fetch real-time transaction data, thereby reducing manual input and improving accuracy.

The system can also be developed as a mobile application, allowing users to track and manage their expenses anytime and anywhere. Advanced NLP techniques and deep learning models can be incorporated to improve the accuracy of text classification and better understand complex transaction descriptions. Additionally, multilingual support can be added to enable the system to process input in different languages.

Another important enhancement is the integration of cloud technology for secure data storage and real-time synchronization across devices. The system can also include advanced features such as voice-based expense entry, fraud detection, and personalized financial planning. Furthermore, incorporating explainable AI techniques can help users understand how the system categorizes expenses and generates recommendations, thereby increasing user trust and system transparency.

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