

## **Project Deliverable: System Requirements**

### **1. Overview of Functional Requirements**

#### **System Description**

Tracking daily finances can be a hassle sometimes. The process is made simpler by the Personal Finance Chatbot, which allows users to chat with the bot and obtain insights on budgeting, saving and spending by uploading their bank statement or history of transactions. Its main goal is to decrease the amount of manual expense tracking while providing individualized advice via chat.

Working professionals or college students, anyone who has trouble with traditional budgeting can use this system. Instead of going through lengthy bank statements, users can simply ask questions like:

- “How much did I spend on shopping in the last two months?”
- “What are my biggest spending categories?”
- “What can be my budget for the month of September?”

For understanding the queries of the user, categorize their spendings and earnings, and to give some valuable suggestions based upon which some necessary actions could be taken, the chatbot will be using LLMs (Large Language Models), parts of Machine Learning and NLP that stands for Natural Language Processing. The system will try to improvise gradually based on the feedback suggested by the user over the time, trying to manage finances more personally and suitably.

#### **Key Functional Capabilities**

The system is built around several core functions:

- **Automated Transaction Categorization:**  
Bank statements that have been uploaded are processed and transactions are categorized into groups like shopping, entertainment, utilities, food and rent. Users no longer have to manually track every payment thanks to this.
- **Spending Pattern Analysis:**  
By studying trends in the user’s financial data like recurring expenses or changes in spending habits it can help highlight areas of overspending or potential savings.
- **Interactive Question Answering:**  
Users can ask questions about specific categories or time periods or spending behaviors.

The chatbot provides clear responses to these questions that are easy to understand for the users.

- **Budget Generation:**  
As an extra feature, the system generates realistic monthly budgets. It bases them on the user's past income and expense patterns. This helps with planning better and setting goals that users can actually hit.
- **Continuous Learning:**  
When users provide feedback, the system utilizes this data to enhance subsequent classifications. With consistent use, this enhances the chatbot's intelligence and precision.

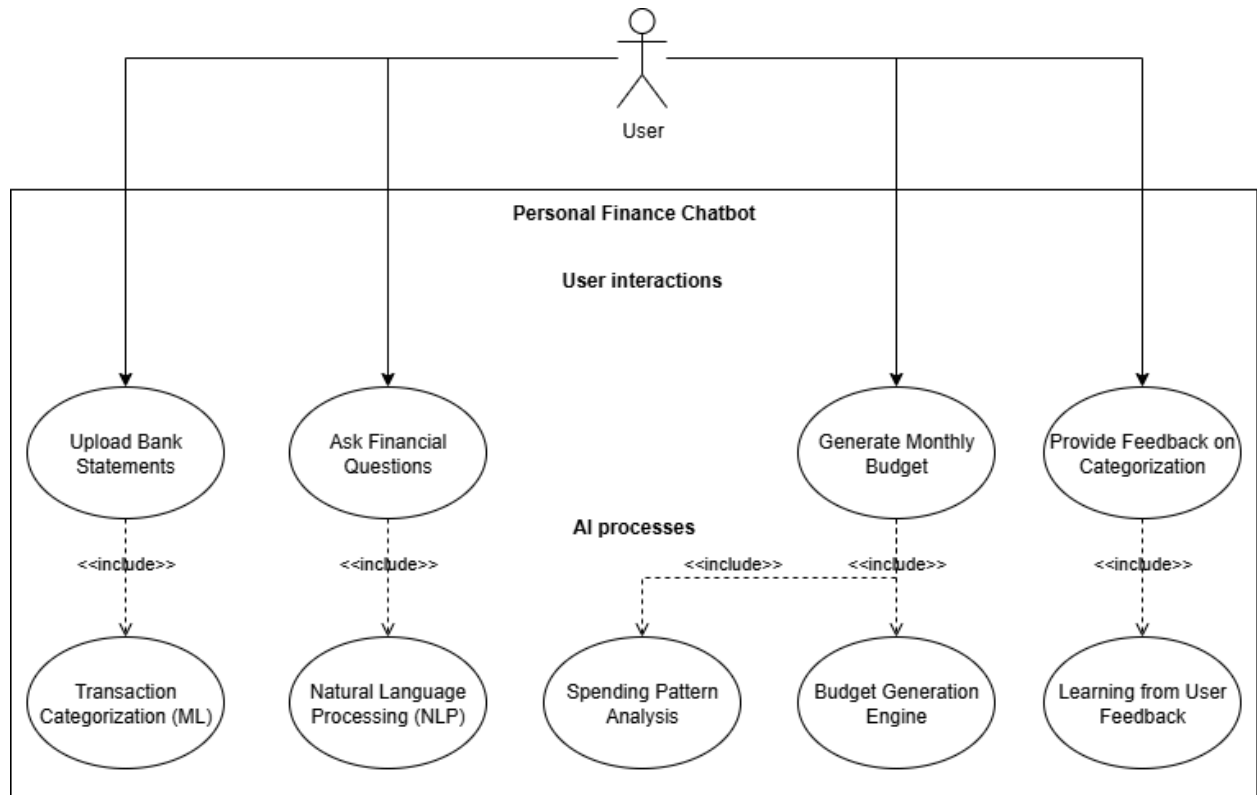
### **Intended AI Components**

The system integrates multiple AI techniques to deliver these functionalities:

- **Natural Language Processing (NLP):** This helps the chatbot to extract important information from user queries and convert them into structured formats.
- **Machine Learning:** Helps with transaction classification and budget recommendations. This improves as more data is processed.
- **Reasoning Under Uncertainty:** Ensures the chatbot can still provide meaningful outputs even when data is ambiguous.
- **Knowledge Representation:** Organizes financial data systematically so that it can be easily analyzed and queried.

### **UML Use Case Diagram**

UML illustrating the system's main interactions between the User and the AI-driven Personal Finance Chatbot:



## 2. User Stories

Story ID	Story description	Preconditions	Post conditions
US1	As a user, I want to upload my financial records such as bank statements so that the chatbot can review my spending and organize it into categories.	The user is logged in and provides valid financial files (CSV, PDF or Excel).	The chatbot reads the data and classifies transactions into groups like groceries, utilities or entertainment.
US2		The chatbot has	The chatbot displays an

	As a user, I want the chatbot to show me a summary of my monthly spending so that I can clearly see where my money is going.	access to the user's categorized financial information.	expense summary with totals for each spending category.
US3	As a user, I want the chatbot to create a realistic monthly budget based on my income and past expenses so that I can manage my money more effectively.	The user has entered income details and the chatbot has stored prior spending records.	The chatbot generates a personalized budget with recommended spending limits.
US4	As a user, I want to ask simple questions like "How much did I spend on dining last month?" so that I can quickly access financial insights.	The chatbot's language-understanding feature is active and transaction data is available.	The chatbot responds with the correct amount or summary based on the stored financial data.
US5	As a user, I want the chatbot to alert me when I go over my budget so that I can control unnecessary spending.	The chatbot monitors expenses and compares them with the user's set limits.	The chatbot sends notifications or messages whenever spending exceeds the budget.
US6	As a user, I want to receive personalized saving tips or money-management advice based on my spending habits.	The chatbot has analyzed previous spending trends.	The chatbot suggests practical saving strategies and lifestyle changes to improve financial health.
US7	As a user, I want to see charts and graphs	Visualization features or tools such as	The chatbot presents clear, interactive visuals

	that visualize my income, spending and savings to better understand my financial habits.	Tableau are integrated with the chatbot.	showing trends and spending breakdowns.
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For each user story, mention whether or not it may need to be broken down  
User Story Evaluation and Breakdown

User Perspective — US1

Description:

As a user, I want to upload my financial data so the chatbot can process and categorize my expenses for analysis and reporting.

Evaluation:

This story can be divided into smaller parts to make implementation clearer and more manageable.

Possible breakdown:

- US1.1: As a user, I want to upload my bank statement so that the chatbot can extract transactions automatically.
- US1.2: As a user, I want the chatbot to classify my expenses into different categories such as food, travel and rent.
- US1.3: As a user, I want to view the processed results, including totals for each category and an overall spending summary.

### 3. Non-Functional Requirements

Provide a separate list of any relevant nonfunctional requirements

1.Performance: There should be no discernible delays in the system's response time. It needs to be streamlined for speed and efficiency because it will be handling massive amounts of transactional and financial data. For both local and cloud-based processing, a minimum of 16 GB of RAM will be advised.

2. Scalability: The chatbot must be able to handle numerous users and process big datasets at once without experiencing any lag. As user demand or data volume increases, it ought to be simple to scale up.
3. Usability: Users of all technical backgrounds should be able to easily navigate the interface, which should be straightforward and intuitive. For a more convenient and organic interaction experience, it should also support voice and text inputs.
4. Reliability: The system needs to constantly provide precise and insightful financial data. Even with high usage, it must be accessible with little downtime.
5. Maintainability: To make updates and enhancements easier, the chatbot's design should be well-organized and modular. This configuration makes it possible to add new features—like complex budgeting or investment tracking—without interfering with the current ones.
6. Integration: Banks, software for budgeting and visualization platforms like Tableau should all be easily accessible through the chatbot's seamless integration with external financial services and APIs. The user's access to thorough financial data and reports is improved by this integration.
7. Data Consistency: The chatbot's financial data must always remain accurate, up-to-date and consistent across all modules. Accurate representation of the most recent transaction categories, spending patterns and financial insights should be ensured by routine data synchronization.
8. Privacy and Security: For enhancing the features of privacy and security, highly secured encryption will be used, to maintain the confidentiality of the user's data, while it is being worked upon or stored. The system will try to adopt few data protection regulations, which will disable the system completely to share any kind of personal data with any other external agent without taking the consent of the user.

## 4. Conclusion

The Personal Finance Chatbot makes managing money easier. It automatically sorts expenses, tracks spending habits and creates personalized budgets, reducing the need for manual work. As people give feedback, the system learns and becomes more accurate and helpful over time.

Term	Definition
<b>Knowledge Base</b>	A structured collection of financial data, rules and categorized transactions that the chatbot uses to answer questions and generate insights.

<b>Supervised Learning</b>	A machine learning method where the system is trained using labeled examples to improve accuracy.
<b>Reinforcement Learning</b>	A learning approach where the system improves by receiving feedback or rewards from user interactions.
<b>Heuristic Search</b>	A problem-solving strategy that uses practical rules or shortcuts to find solutions efficiently.
<b>Natural Language Processing (NLP)</b>	A technique that helps the chatbot understand and respond to human language by identifying key information in user queries.
<b>Reasoning Under Uncertainty</b>	The ability of the system to make the best possible decisions even when transaction data is incomplete or ambiguous.
<b>Budget Generation</b>	The process of creating personalized monthly spending plans based on historical expenses and income.
<b>Transaction Categorization</b>	Automatically grouping financial transactions into categories like food, rent or entertainment to simplify analysis.

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