



AI Powered Smart Banking Assistant

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Abstract: Digital banking systems are becoming increasingly important, but many users still face difficulties while accessing banking services because of language barriers and complex interfaces. This paper proposes an AI Powered Smart Banking Assistant integrated with a dummy banking backend as BANK. The proposed system combines multilingual communication, AI chatbot support, voice assistance, and fingerprint authentication to simulate realistic banking workflows in an academic environment.

The system allows users to perform account services, ATM card services, and Aadhaar linking using voice or text interaction. A centralized MySQL database stores and manages all service requests. The proposed prototype demonstrates how AI-driven multilingual banking systems can improve accessibility and reduce dependency on manual customer support.

Keywords: Artificial Intelligence, Smart Banking, NLP, Voice Assistant, Multilingual Banking, Chatbot

I. INTRODUCTION

Digital banking applications are widely used for online financial services such as account management, ATM services, Aadhaar linking, and customer communication. However, many users still face difficulties while using modern banking applications due to language dependency, complex interfaces, and lack of technical knowledge.

Existing banking systems mainly focus on customer query handling and often require manual support from bank employees.

Artificial Intelligence and Natural Language Processing technologies are now being integrated into banking systems to improve customer interaction and automate service assistance. AI chatbots and voice assistants can provide continuous banking guidance without requiring human intervention. Similarly, multilingual communication improves accessibility for users who prefer local languages

The proposed AI Powered Smart Banking Assistant introduces a secure dummy banking environment as BANK. The system combines multilingual support, AI chatbot interaction, voice assistance, fingerprint authentication, and centralized database management to simulate realistic banking workflows in a safe academic environment.

II. LITERATURE SURVEY

Several studies have explored AI-based banking systems and conversational technologies. AI banking chatbot systems mainly focus on automated customer query handling and customer support. Banking virtual assistant research introduced speech recognition and voice interaction techniques for banking communication. NLP-based conversational AI studies provided concepts such as intent detection, context management, and entity extraction.

Research on multilingual voice banking demonstrated the use of Automatic Speech Recognition and multilingual interaction for voice-driven banking systems. Biometric authentication studies highlighted fingerprint authentication as a secure and practical login mechanism for mobile banking systems.

Most existing systems focus only on individual modules such as chatbot support, biometric authentication, or voice assistance. The proposed system integrates all these features into a unified AI-assisted banking platform.

III. PROBLEM STATEMENT

Current banking systems do not provide a complete multilingual AI-assisted platform capable of realistic academic banking workflow execution. Most applications focus only on query handling instead of complete banking service processing. There is a need for a secure AI-powered banking assistant capable of multilingual communication, voice



interaction, biometric authentication, and centralized dummy banking workflow management.

IV. PROPOSED SYSTEM

The proposed system consists of a customer interface, AI chatbot module, multilingual processing layer, and centralized dummy banking backend. Users can interact with the system using voice or text input. The AI chatbot identifies user intent and guides the customer through banking workflows such as account creation, ATM card services, and Aadhaar linking.

The BANK backend stores customer records, request history, and service details in a centralized MySQL database. The system generates responses in the user's preferred language and maintains secure login using fingerprint authentication.

V. METHODOLOGY

The methodology follows a step-by-step workflow. First, the customer logs into the application using customer credentials and fingerprint authentication. The user selects a preferred language and interacts with the AI assistant through voice or text input. The chatbot processes the request using NLP concepts and identifies the required banking service.

The request is then forwarded to the BANK backend where the MySQL database updates customer records and service information. Finally, the system generates a response in the user's preferred language and stores request history for future tracking.

VI. ADVANTAGES

The proposed system simplifies banking interaction using AI assistance and multilingual communication. It reduces dependency on manual customer support and improves accessibility through voice and chat-based interaction. Fingerprint authentication improves security, while the centralized database enables realistic banking workflow simulation suitable for academic demonstration.

VII. CONCLUSION

This paper presented an AI Powered Smart Banking Assistant integrated with a dummy banking backend as BANK. The system combines AI chatbot support, multilingual interaction, voice assistance, and fingerprint authentication to simulate realistic banking workflows in a secure academic environment. The proposed prototype demonstrates how AI-assisted banking systems can improve accessibility, simplify customer interaction, and reduce dependency on manual support.

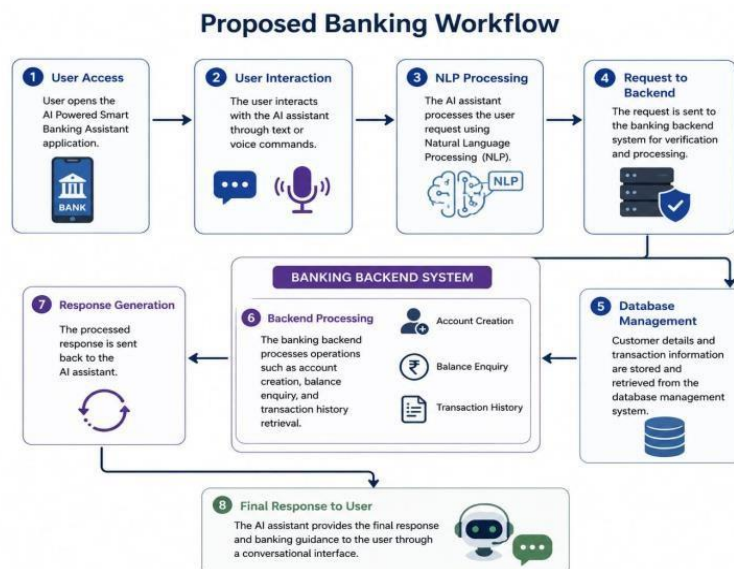


Fig 1. Proposed Banking Workflow

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