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AI CHAT BOT FOR ONLINE BANKING ASSISTANCE

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ABSTARCT

This project presents the development of a secure and user-friendly online banking platform integrated with a conversational chatbot for enhanced customer support. The backend of the platform is built using Django, a robust web framework for rapid and scalable development. The platform provides essential banking features such as account management, fund transfers, transaction history, and bill payments.

To improve user engagement and support, an intelligent chatbot powered by Natural Language Processing (NLP) techniques is integrated into the platform. The chatbot assists users in real-time by answering queries, providing transaction details, guiding users through banking processes, and handling simple service requests. NLP models are trained to understand various banking-related intents and user inputs in natural language, making the interactions intuitive and efficient. Robust authentication and encryption to ensure the confidentiality and integrity of user data. A user-friendly interface for viewing account details and managing transactions.

Real-time query handling and process guidance through a chatbot. Intent recognition and context-aware responses for accurate query handling. Comprehensive tools for managing user accounts, transactions, and bot analytics. The project aims to enhance user experience, minimize customer service workload, and ensure secure and efficient online banking operations. The implementation of Django provides scalability and maintainability, while NLP-driven chatbot functionality offers a seamless and modern banking experience.

KEYWORDS: Development,Conversational, Transaction,Banking,Authentication,Confi dentiality.

1. INTRODUCTION

In the current era of digital transformation, the banking sector is undergoing a significant shift toward automation and enhanced customer experiences. Traditional banking systems are being replaced by sophisticated online platforms that offer convenient, secure, and seamless services. As the reliance on digital banking grows,

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financial institutions are adopting advanced technologies to meet the increasing demand for real-time services, personalized interactions, and round-the-clock support.

This project focuses on developing an advanced Online Banking Platform integrated with an AI-powered Conversational Bot using Django for backend development and Natural Language Processing (NLP) for smart customer interactions. The platform is designed to provide a wide array of banking services, including account management, fund transfers, transaction tracking, and bill payments, while ensuring a secure and user-friendly experience.

One of the standouts features of this platform is the integration of a chatbot that serves as a virtual banking assistant. With the power of NLP, the chatbot can understand and process user queries in natural language, providing intelligent, context-aware responses. This capability allows the bot to handle common banking requests, provide transaction updates, offer account guidance, and even Robust authentication mechanisms, including multi-factor authentication and encryption for secure transactions. Protection against unauthorized access and financial fraud. A user-centric interface for viewing account details, transaction summaries, and personalized recommendations.

2. LITERATURE SURVEY

Conversation to Automation in Banking Through Chatbot Using Artificial Machine Intelligence Language:Sasha Fathima Suhel; Vinod Kumar Shukla; Sonali Vyas; Ved Prakash Mishra 2020.

Artificial Machine Intelligence is a very complicated topic. It involves creating machines that are capable of simulating knowledge. This paper examines some of the latest AI patterns and activities and then provides alternative theory of change in some of the popular and widely accepted postulates of today. Based on basic AI (Artificial Intelligence) structuring and working for this, System-Chatbots are made (or chatter bots). The paper shows that AI is ever improving. As of now there isn't enough information on AI however this paper provides a new concept which addresses machine intelligence and sheds light on the potential of intelligent systems. The rise of chatbots in the finance sector is the latest disruptive force that has changed the way customers interact. In the banking industry, the introduction of Artificial Intelligence has driven chatbots and changed the face of the interaction between bank and customers. The

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banking sector plays an important role in the development of any country. It also explores the existing usability of chatbot to assess whether it can fulfill customers' ever-changing needs [1].

An overview of artificial intelligence based chatbots and an example chatbot application: S. Nithuna; C.A. Laseena July 2020.

Chatbot can be described as software that can chat with people using artificial intelligence. This Software is used to perform tasks such as quickly responding to users, informing them, helping to purchase products and providing better service to customers. In this paper, we present the general working principle and the basic concepts of artificial intelligence based chatbots and related concepts as well as their applications in various sectors such as telecommunication, banking, health, customer call centers and e-commerce. Additionally, the results of an example chatbot for donation service developed for telecommunication service provider are presented using the proposed architecture [2].

An overview of artificial intelligence based chatbots and an example chatbot application: S. Nithuna; C.A. Laseena July 2020.

The growth of technologies like Artificial Intelligence (AI), Big Data & Internet of Things (IoT), etc. has marked many advancements in the technological world in the last decade. These technologies have a wide range of applications. One such application is "Chatterbot or "Chatbot". Chatbots are conversational AIs, which mimic humans while conversing. This technology is a combination of AI & Natural Language Processing (NLP). Chatbots have been a part of technological advancement as they eliminate the need of human & automates boring tasks. Chatbots are used in various domains like education, healthcare, business, etc. In the study undertaken, we reviewed several papers & discussed types of chatbots, their advantages & disadvantages. The review suggested that chatbots can be used everywhere because of their accuracy, lack of dependability on human resources & 24x7 accessibilit [3].

An overview of artificial intelligence based chatbots and an example chatbot application: S. Nithuna; C.A. Laseena July 2020.

Many banks and financial service companies have been transforming the way to run their businesses and serve customers. In this paper, we present a use case for digitizing customer journeys in the area of consumer banking call centre. The main objective is to provide personalized customer service experience

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through an integrated solution for call centre, including the Interactive Voice Response (IVR) system, SMS system, Internet Banking platform and chatbot. Topic modeling was performed on the dialogue transcript between the customers and Customer Service Officers (CSOs) to identify [4].

Privacy Preserving Chatbot Conversations: Debmalya Biswas Dec 2020.

With chatbots gaining traction and their adoption growing in different verticals, e.g., Health, Banking, Dating; and users sharing more and more private information with chatbots - studies have started to highlight the privacy risks of chatbots. In this paper, we propose two privacy preserving approaches for chatbot conversations. The first approach applies `entity' based privacy filtering and transformation, and can be applied directly on the app (client) side. It however requires knowledge of the chatbot design to be enabled. We present a second scheme based on Searchable Encryption that can preserve user chat privacy, without requiring any knowledge of the chatbot design. Finally, we present some experimental results based on a real-life employee help desk chatbot that validates both the need and feasibility of the proposed approaches [5].

3. EXISTING SYSTEM

Traditional banking systems are being replaced by sophisticated online platforms that offer convenient, secure, and seamless services. As the reliance on digital banking grows, financial institutions are adopting advanced technologies to meet the increasing demand for real-time services, personalized interactions, and round-the-clock support.Many banks and financial service companies have been transforming the way to run their businesses and serve customers. In this paper, we present a use case for digitizing customer journeys in the area of consumer banking call centre. The main objective is to provide personalized customer service experience through an integrated solution for call centre, including the Interactive Voice Response (IVR) system, SMS system, Internet Banking platform and chatbot.

3.1 DIS ADVANTAGES:

1) Banking systems are being replaced by sophisticated online platforms that offer convenient, secure, and seamless services.
2) As the reliance on digital banking grows, financial institutions are adopting advanced technologies to meet the increasing demand for real-time services, personalized interactions, and round-the-clock support.

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4. PROPOSED SYSTEM:

This project focuses on developing an advanced Online Banking Platform integrated with an AI-powered Conversational Bot using Django for backend development and Natural Language Processing (NLP) for smart customer interactions. The platform is designed to provide a wide array of banking services, including account management, fund transfers, transaction tracking, and bill payments, while ensuring a secure and user-friendly experience.One of the standouts features of this platform is the integration of a chatbot that serves as a virtual banking assistant. With the power of NLP, the chatbot can understand and process user queries in natural language, providing intelligent, context-aware responses. This capability allows the bot to handle common banking requests, provide transaction updates, offer account guidance, and even Robust authentication mechanisms, including multi-factor authentication and encryption for secure transactions. Protection against unauthorized access and financial fraud. A user-centric interface for viewing account details, transaction summaries, and personalized recommendations.

4.1 ADVANTAGES:

1) One of the standouts features of this platform is the integration of a chatbot that serves as a virtual banking assistant.

2) With the power of NLP, the chatbot can understand and process user queries in natural language, providing intelligent, context-aware responses.

3) This capability allows the bot to handle common banking requests, provide transaction updates, offer account guidance, and even Robust authentication mechanisms, including multi-factor authentication and encryption for secure transactions.

4) Protection against unauthorized access and financial fraud.

5. SYSTEM ARCHITECTURE

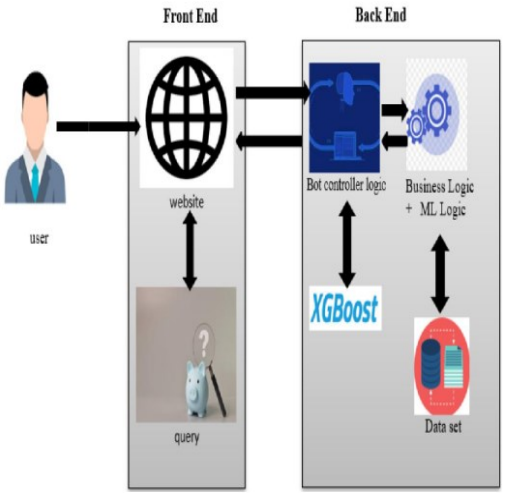

Fig 5.1 System Architecture

6. RELATED WORK

6.1 Connector Module

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Customer queries can be sent via Slack messaging platform and also customers canuse chatbot using the bank website. Both the interfaces (slack and the website) are connected to the connector module. This is a two-way connection slack, and the website can send messages through the connector plus both interfaces can receive messages through the connector module.

6.2 Natural Language Understanding Unit

The connector module will send customer queries to the Natural Language Understanding (NLU) unit. NLU unit includes two processes, they are Entity Extractor and Intent Classifier. Intent of the customer query and the entities in the query will be carried out using those Entity extractors and Intent classifier.

6.3 Entity Extractor

The first thing of this NLU unit is to tokenize user queries to understand a meaningful pattern of the user's input. To understand the meaning of the sentence, tokenizer will split the full sentence into smaller units. We are developing a domain specific AI assistant therefore, the best option for the tokenizer is Whitespace Tokenizer. This tokenizer will look for a white space of the sentence and create a token for every white space separated character sequence.

6.4 Dialog Management Unit

Once the entities and intent are extracted, that data will be fed into the dialog management unit. Dialog management unit includes three layers. They are Dialog state, Dialog Policy, and Actions.

7. RESULTS

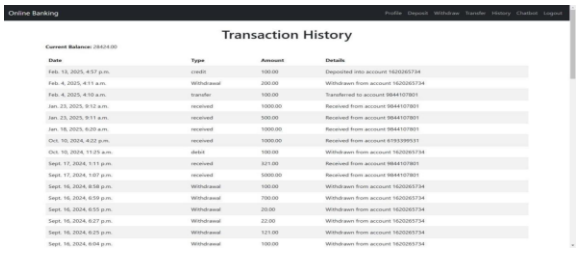

Fig 7.1 Transaction history

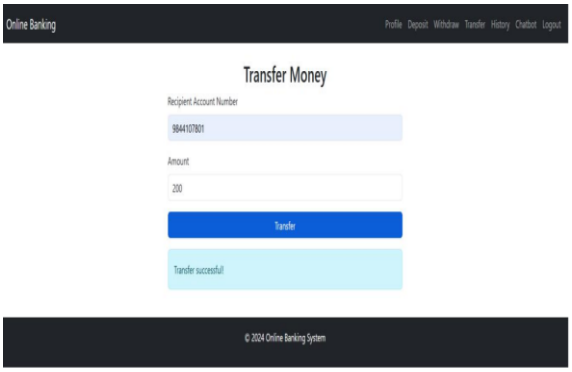

Fig 7.2 Transaction status

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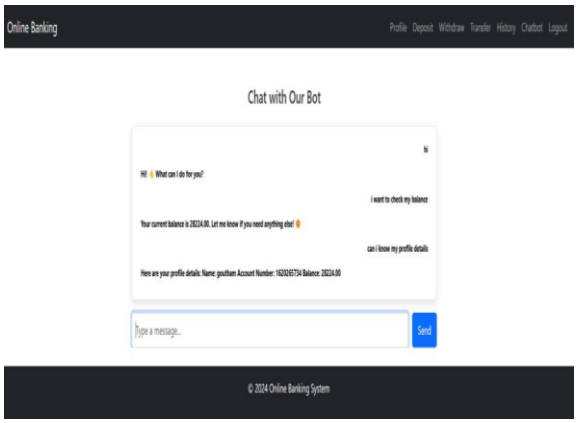

Fig 7.2 Chat-bot assistance for Transaction status

8. CONCLUSION

In conclusion, the proposed solution represents a forward-thinking approach to the future of banking by combining cutting-edge AI and NLP technologies with a secure, user-centric platform. It sets the stage for a more innovative, personalized, and efficient online banking experience that meets the evolving needs of both consumers and financial institutions.This platform also allows for continuous learning and improvement of the chatbot's capabilities, thanks to its AI-driven model that adapts to user behaviour and interactions. By improving customer engagement, automating routine tasks, and providing real-time support, the system not only enhances operational efficiency but also increases customer satisfaction and loyalty.

9. REFFERENCES

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