Banking Virtual Assistant (BVA) To Improve Customer's Banking Experience

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***Abstract*— Physically impaired persons have to encounter numerous complications in banking activities. To provide a solution to this problem, we have introduced a methodology of abanking virtual assistant '(Helper)'. Users interact with systems through voice commands. Speech enabled virtual assistant to offer a services and, enhancing them with new and effective userinterfaces. The ultimate goal of this project is to add features to improve customers' banking experience. This paper presents a web application that can be used for banking system in order to meet the services without visiting bank premises. Developed a voice-controlled desktop web application platform especially for the better customer experience, even non impaired people can also use the services provided by the application and use it as a virtual-assistant. The web application is user-independent and human voice commands are given to the in English Language. This application model enables the user to voice based account opening, request for passbook or cheque book, voice-based formfilling.**

Now a days, people are facing so many difficulties to fill the formin Bank, some of them are physically impaired. We can develop the automatic form filling system for the handicapped peoples. These people can fill the form without touching anything and it isfully operated by voice. So, this form filling system is very usefulfor the society and reduce the wastage of time with the paper andpen .So, it is useful for the society.

Keywords: Banking system, Voice User Interface, Voice control,AI-based Voice Assistant, GTTS Engine, Text to Speech, Speechto Text, Voice access.

I. INTRODUCTION

A virtual assistant is an intelligent application that can perform tasks or provide services for a person responding to orders or inquiries. Users use voice commands to request their BankingVirtual Assistant to answer the questions and handle other essential activities like transferring money, generating passbooks, loan inquiries, and Payment schedules. Customerscommunicate via text or voice command to gain quick answers to banking queries, and personalized financial advice and caneven carry out transactions. Voice-enabled banking virtual assistants can handle payments and transfers, credit card activation, password resets, and pay alerts. Intelligent assistantthat are able to help users finish tasks more efficiently via spoken interactions.it will Reminders for customers anytime and from anywhere. Able to interact with the user by means of speech synthesis, it can perform a wide variety of tasks - transferring money, generating passbooks, loan inquiries, and Payment schedules, and voice based form filling. It is not necessarily need to communicate only through voice, butmodern voice assistant are interacted through Voice, it helps physically impaired peoples, i.e. interacting with users only through voice, without the use of screens or physical interaction. This requires the virtual assistant to: (A) listen to human voice, (B) understand what is being implied, and (C) perform an action or reply with their own voice. This concept is visualized in Fig.3. Now a days, people are facing so many difficulties to fill the form, Develop the automatic form fillingsystem for the handicapped and blind peoples. These people can fill the form without touching anything and it is fully operated by voice. Voice Recognition play a major role in the world, to control anything using voice. [From filling] Although it is one of the most established sectors in the world, banking sector also faces significant challenges. Recently, artificial

intelligence (AI) has been suggested as a potential solution to these challenges. Moreover, banks are operating ina very competitive environment today. To be able to survive and grow in such environment banks seek the latest technologies.[ai in banking system].

A banking voice-based Assistant powered by artificial intelligence and natural language processing capabilities that allows customers to perform banking tasks through voice commands. This type of assistant is typically integrated into abank's website and can assist with tasks such as checking account balances, performing transactions, and accessing account information. The aim of a banking voice-based assistant is to provide customers with an easy, convenient andsecure way to manage their finances through voice interactions.

II. REALATED WORK

For proposing a new system, several research are considered that are follows:

By utilizing the field of AI there are numerous applications are developed research is being done in making the regular rule based[3] chatbot to informative, responsive and complete the correspondence in conversational human language .thisrequires NLP and ML Technologies .

Et.al Md.Rakibuz Sultan [1] specifies that designed virtual assistant for visually impaired people to use diverse functions,it is capable of interacting with the user with Bangla language as a oral communication. The system performs only basic tasklike YouTube search, and email sending.

Et.al N. Sripriya.[2]The Title specifies that developed bot hasproved to be efficient for searching of different kinds of places such as temple, restaurants, malls, theatres, church, mosque and many more within the radius of 50 kms.

Et.al Hrushikesh Koundinya K[3]The Title specifies that designed college specific chatbot system that can be custom fitted to education domain chatbot.

Et.al Kumaran N[4]The title specifies that designed system ofIntelligent Personal Assistant – Virtual Digital Assistant using speech recognition and synthesizer Finds its applications inseveral domains. The system is implemented with favourable results with supported software development for speechrecognition. Different tools and applications are integrated forthe execution ,algorithms like parsing ,unification are used . Et.al Subhash S [5] Built-in AI- based Voice Assistant which can do Tasks like opening you tube , Google map withoutinconvenience this can listen the verbal commands and respond according to the users request. gtts will analyze thecommand convert that audio string into text.

Et.al Veton Këpuska [8]From This paper the proposal introduces the structure of Next-Generation of VirtualPersonal Assistants that is a new VPAs system designed to converse with a human, with a coherent structure system has used speech, graphics, video, gestures and other modes for communication in both the input and output channel.

Et.al Isaac Samuel [9]This work would bring comfort and security to not just the visually impaired, but the nation as a whole. The voice chatbot system will be used as an alternativeform of payment whereby users can engage in financial transactions such as sending of money just by speaking. It would also reduce the dependence on using ATM cards for transactions or visiting ATMs to make transactions.

Et.al Nikhita Kalburgikara [10]The system is a virtual assistant, a software that uses Artificial Intelligence to guide the users and takes actions to effectively understand userqueries and respond to them rationally.

Et.al S. Usharani in this system author states that using this people can fill out the form without touching anything and it is fully operated by voice. [11] form filling system is very useful for society and reduces the wastage of time with paperand pen.

III.PROPOSED SYSTEMA.SPEECH RECOGNITION

Speech recognition refers to the technology that enables computers or machines to interpret and understand human speech. It involves the analysis of the sound waves produced by human speech and the conversion of those sound waves into digital data that can be processed by a computer.

The technology works by breaking down spoken words into individual sounds and then matching those sounds to known words and phrases in a database. This process requires sophisticated algorithms and machine learning techniques to accurately recognize speech patterns and interpret their meaning.

A.TEXT TO SPEECH

Text-to-speech (TTS) technology refers to the process of converting written text into spoken words using computer- generated voices. This technology uses natural language processing (NLP) algorithms and machine learning techniquesto analyze written text and generate spoken output that soundslike human speech.

The technology works by breaking down the written text intoindividual words and sentences and then analyzing the grammar, syntax, and context of the text to determine the appropriate pronunciation and intonation for each word and sentence. The TTS engine then synthesizes the spoken output using a pre-recorded library of human speech sounds, which are combined and modulated to produce natural-soundingspeech.

B.VOICE ACCESS

Voice access refers to the use of voice commands and natural language processing (NLP) technology to interact with and control digital devices, applications, and services. Voice access technology enables users to perform tasks, access information, and communicate with digital systems using spoken commands, rather than manual input such as typing orclicking.

Voice access technology has significant potential to improve accessibility for people with disabilities, particularly those with mobility impairments or visual impairments. By enablingusers to interact with digital systems using voice commands, voice access technology can help people with disabilities to access information and services that might otherwise be difficult or impossible to use.

C.AUTHENTICATION

OTP (One-Time Password) authentication is a security mechanism used to verify the identity of a user or device by requiring them to enter a temporary password or code that is valid for only one use or a short period of time. This proposed system implemented an OTP authentication process for money transferring. For authenticating, the payment processing system generates the unique OTP and sends it to the user via a communication channel such as text messages. The user then enters the OTP code and then the system verifies the code to authenticate the user’s money- transferring process.

OTP authentication provides an extra layer of security compared to traditional password-based authentication methods, as the OTP code is valid for only one use and cannotbe reused.

D.IMPLEMENTATION

A voice-based online banking web application is a digital platform that allows customers to access and manage their bank accounts and financial information using voice commands and natural language processing (NLP) technology. This type of web application enables customers to perform a variety of banking tasks, such as checking their account balance, transferring funds, paying bills, and reviewing account activity, simply by speaking into their devices.

To use a voice-based online banking web application, a customer would typically log in to the application using their account credentials and then navigate the system using voice commands. The application would use NLP algorithms and machine learning techniques to interpret the user's commands and respond with appropriate actions or information.

Voice-based online banking web applications have several potential benefits for customers, including increased convenience, accessibility, and security. By enabling customers to access their financial information and perform banking tasks using voice commands, these applications can help to reduce the time and effort required for these activities, particularly for customers with disabilities or limited mobility.

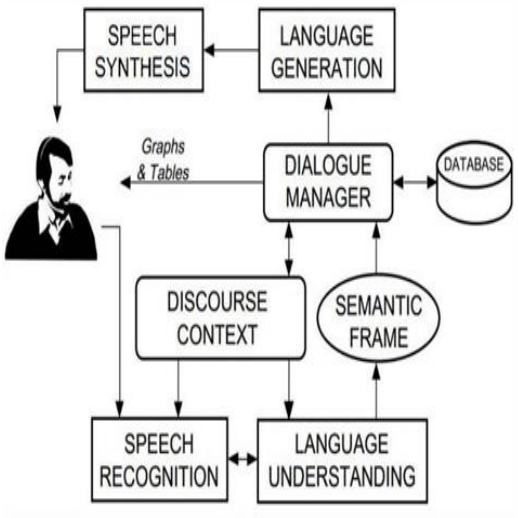


Fig 1. Speech Recognition Module

III.ARCHITECTURE

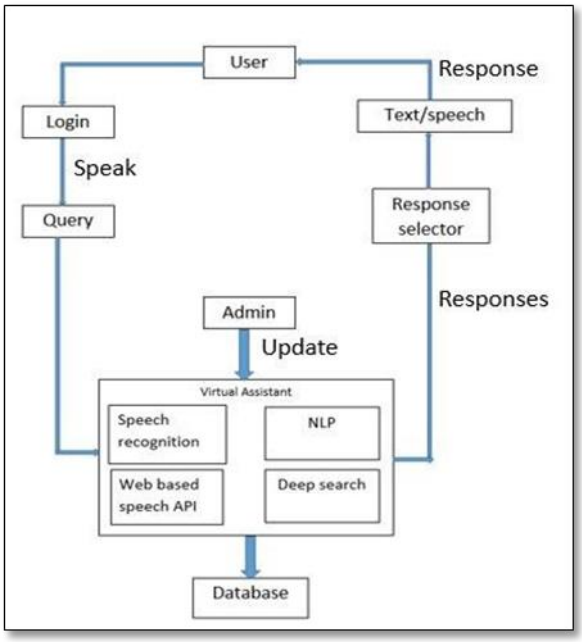


Fig 2: system architecture

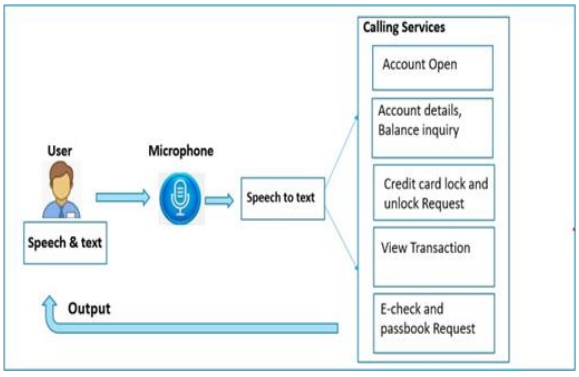
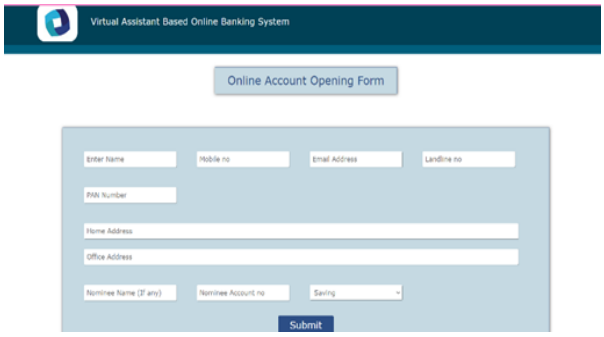


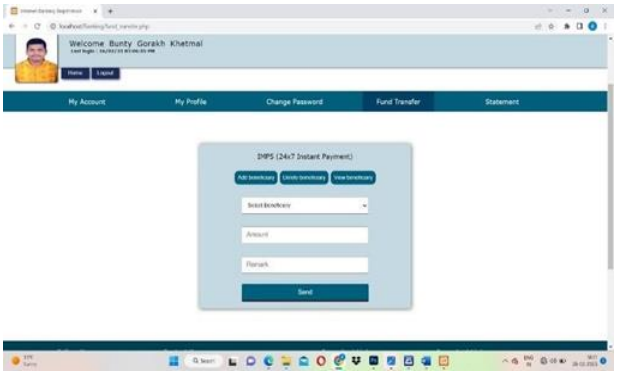
Fig 3: Block diagram

IV.SNAPSHOTS

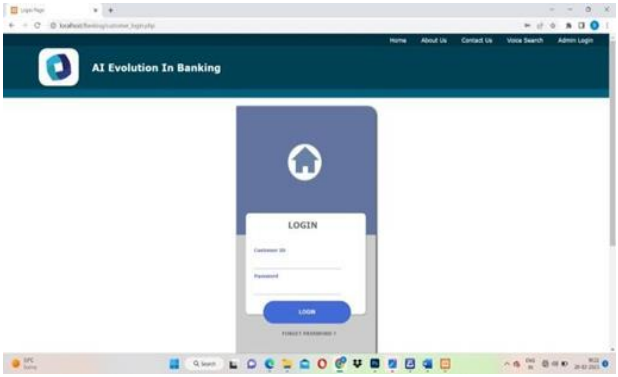
The user must need to login first to proceed



Voice search feature allows user to search via voice



Fund transfer from one account to another having account insame bank



Voice based from filling to login for users

V.CONCLUSION

The proposed system is Artificial Intelligence-based Virtual Assistant for banking that will help users for better banking experience it's the next evaluation in digital banking. the system is capable of interacting with the user via English oral communication, this implementation strategy demonstrates a satisfactory outcome.

it Improved Accessibility, it can be an excellent solution for people with visual impairments or disabilities, making banking more accessible to a

wider range of customers. systems can provide customers with a more convenient way to perform banking transactions, as they can simply speak their commands instead of navigating through a mobile app or website. By implementing a virtual Assistant in the banking system, banks can potentially reduce the costs associated withtraditional banking methods, such as customer servicerepresentatives or brick-and-mortar locations. there may be limitations to voice-based banking systems, such as the need for a stable internet connection and the possibility of errors in voice recognition. systems can offer a personalized and seamless customer experience it can reduce the need for customers to approach bank premises physically for basic banking tasks. the proposed system Banking Virtual Assistant can handle essential activities like transferring money, generating passbooks, loan inquiries, and voice-based form filling. This system is not perfect and is present as an outcome of ongoing research work and updates, this process still goingof approaching this system to create interest among the research community to develop a more powerful and secure similar system like this it gives ease use of banking application. in the future developing applications like this for mobile versions provide user-friendly integration of AI and can generate productive responses like humans.

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