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Voice Recognition In Banking System

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ABSTRACT
Banking system in digital mode has become a huge success. It reduces time and cost. We send or receive money, or we try to get all the other details regarding our bank account, bank statement, etc., But still we have a slight drawback or issues in our mobile banking app. So we suggest an idea of banking using voice recognition.
Keywords— Voice recogintion, AI bots, Digital banking,Voice Assistance, Natural Language processing, User Interface.

1. Introduction

An idea of banking system using voice recognition is proposed in this project. Voice recognition by existing voice assistance by the means of artificial intelligence will be used here. In day-to-day life, we all are familiar with digital banking with the aid of banking apps with secure pin to send money from one's bank account to another. There may be risk of misusing the security pin incase if the pin is known by the third person. So we come up with an idea of voice recognition in banking system. Highly secure and banks like Wells Fargo in San Francisco, US, California have already introduced this voice recognition sytsem in banking. We can aslo develop this idea in local banks for easier transaction with high security and at low cost of maintainance. This projects uses the Voice assisstance like the AI bots which easily recognises the voice of the owner even their voice if has slight changes because of the regular use of voice assistance in our day to day life. Also we can give command to send money from one bank to another. This is easy for the customers to use and neglecting the server problem, network problem, and the use of U-Pin to be used.

This also will be more helpful for the specially abled peoples. Normal banking systems will be more complex for the blind people to open the banking application, to enter the U-Pin, to select the customer to send the money and to verify all the details. In this circumstances, voice command to transacte the money will be more helpful. And also the AI bots will remind them with their balance amount, credited amount, or with debited amount for their knowledge. As people of this generation are most likely interested in advancement of technology, the idea of voice recognition in banking systems will be more effective and more useful in all life.

This system was better for the usage of the banking as it provides the mechanisms of Artificial Intelligence combined with the banking system to provide better ux for online banking without Human involvement by using advanced deep learning and Voice assistance that has been in the mobiles.

Advantages,

- Ease to use
- Better user experience
- Faster when compared and Non involvement of human activities
- No special requirements needed

2. Related Works

Author has listed with several methods to extract identical features of the voice of human.The methods are LPC,LPCC,PLP,MFCC,RASTA.[1]

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Speech recognition library has many built-in functions which will make the assistant understand the command given by the user.It also uses WOLFRAMALPHA like API's to make calculations,or for any web search and gives the required output.[2]
The author have usedSpeech recognition, python for backend and API calls.and google text to speech.The speech from physical sound is converted to electrical signal and then to digital data with analog-to-didtal convertor. The python backend is used to get the ouput by interchanging the input command by speech recognition module.And the api call is used to get the user data from the external server and gives it back to the client. Then the google text to speech converts the text to phonmic representation and this is converted to waveform and that results in sound.[3]
Through microphone, speech is given as input.And the data in the audio is recognised and it is converted into text.Then it compares the user given input with the commands pre-defined.Finally the output is given.[4]
Along with the technologies used in [4], The author have added an extra feature. The feature is that, it recognises the background noise and removes it.[5]
Python programming is used to build the voice assitance.The user can give the command,"Play a song" or Open "Whatsapp.com".Then it will respond to the command and plays the required song.[6]
This system gives the automated chechbook re-order facility,gives inforamtion on their account,communicates with the customer's through voice messages.The bots are also trained with the issues existed prior.These errors can be cleared with these bots.[7]
The sample voice is captured and the voice print is extracted along with its behavioural paramater and it is compared with the data stored in the voice print database.[8]
The user uses the message platform to enquire their queries. Using Natural Language Processing, the bot is trained with logics and the action is performed with the help of information source and the result is given to the user to solve their queries.[9]

3. Proposed Methodology

The Ideology of the system starts with the linkage of the bank account of with the model that we have developed using Deep Neural Network strategy this will accurately make the amount transaction in an ease and secured manner using the following technologies ,we starts with the model creation involving the collection of voice data of the customer who is going to make the transaction and it is similar to the encryption and decryption method as receiver who is going to receive money was need to accept or we can implement the system there also to make a end to end connect of AI system in both receiver and sender.

3.1 Artificial Intelligence in banking

Artificial Intelligence plays a vital role in our daily life. Human intelligence like the emotions, ability to solve the problem, these algorithms are coded step by step and are fed to the machine can be termed as Artificial intelligence(AI). Artificial Intelligence can be used to reduce human work and make it easier for human to complete their work. AI machines are developed with human learning and problem solving skills to do the human works. Then the AI application is developed to next stage which includes the web search engines like Google, the recommeandtion systems in amazon, youtube, Google etc., ,the voice assistance like the Siri and Alexa, self driving cars like Tesla and also the decision is made automatically with the datasets or information fed to the application.Artificial Intelligence in banking can detect and predict the future outcome ,records the pattern of the money transactions, detect fraudulent in money transaction,etc.

3.2 Voice Assistance

Voice Assistance are AI bots which are used to make conversations with humans and obey the commands of the human and it is also interactive. This voice assistance tries to understand the human language and communicate the same. Voice algorithm works on the following steps.
1.We humans initiate the command.
2. The speech is then converted to text.

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3.Background noises are filtered.
4. Followed by this, the text is processed with neural networks.
5. Understood by AI context.
6. Related responses are gathered.
7. It is then finally communicated to the user.

Voice Assistance like Siri ,Cortana ,Alexa ,Google Voice Assistance are best suitable examples of voice assistance that are best in working as a modern assistance build for making our daily need in a right manner by this we are going make a development in the system by introducing the new system called banking mode which enables the

Voice processing and understanding by NLP mechanisms,along with the Iot Mechanism of the Mobile speakers and recorders.

3.2.1 Natural Language Processing

NLP is a Mathematical linguistics strategy used for the chatbot to analyse the contextual language of humans and also to generate the response text correctly .It has 2 techniques like,

- NLU (Natural Language Understanding)
- NLG (Natural Language Generation)

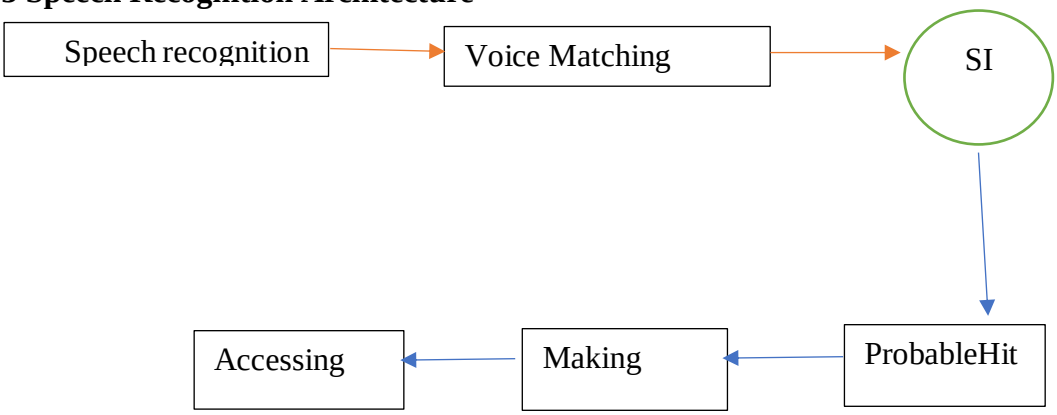
3.2.2 Natural Language Understanding (NLU)

Vocal language of humans are highly unstructured phenomenon with the set of flexible rules ,if we need to make our system to understand these language properly ,we must convert it to machine understandable form or logical analysis needed to be carried out.

3.2.3 Natural Language Generation (NLG)

With the help of NLU and natural language generation (NLG) ,it was easier to transform the the bot into own thinking mechanism that can stimulate the reply text on its own correctly and it was able to learn from its mistakes similar to Reinforcement Learning Bots.

3.3 Speech Recognition Architecture



3.i Required Libraries:

SpeechRecognition - used for speech control.
Portaudio19-dev - used to identify speech.
Mpg123 - to create sound assistance.

3.4 Speech Recognition

It is used to recognize human spoken Language**,**broad array of research in computer science, linguistics and computer engineering. Many modern devices and text-focused programs have speech recognition functions in them to allow for easier or hands-free use of a device,

- analyze the audio;
- break it into parts;
- digitize it into a computer-readable format; and
- use an algorithm to match it to the most suitable text representation.

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3.5 User Interface

An user interface is designed to get the login credentials along with the verification processes and it is then made to get the banking details from the user so that it can access on its own whenever the system is assigned with the voice task.

4. Entire Architecture

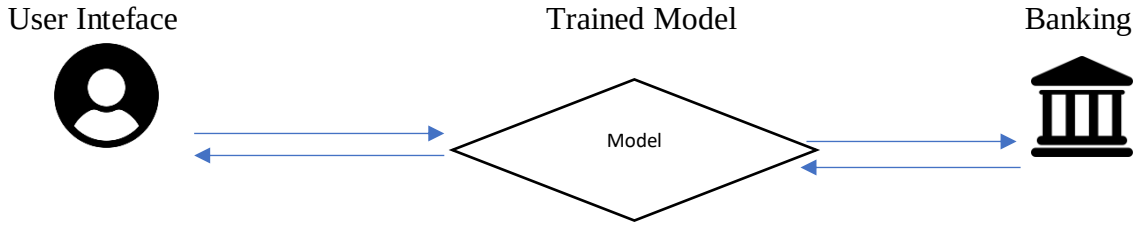

Fig. 4.1.End to End Architecture

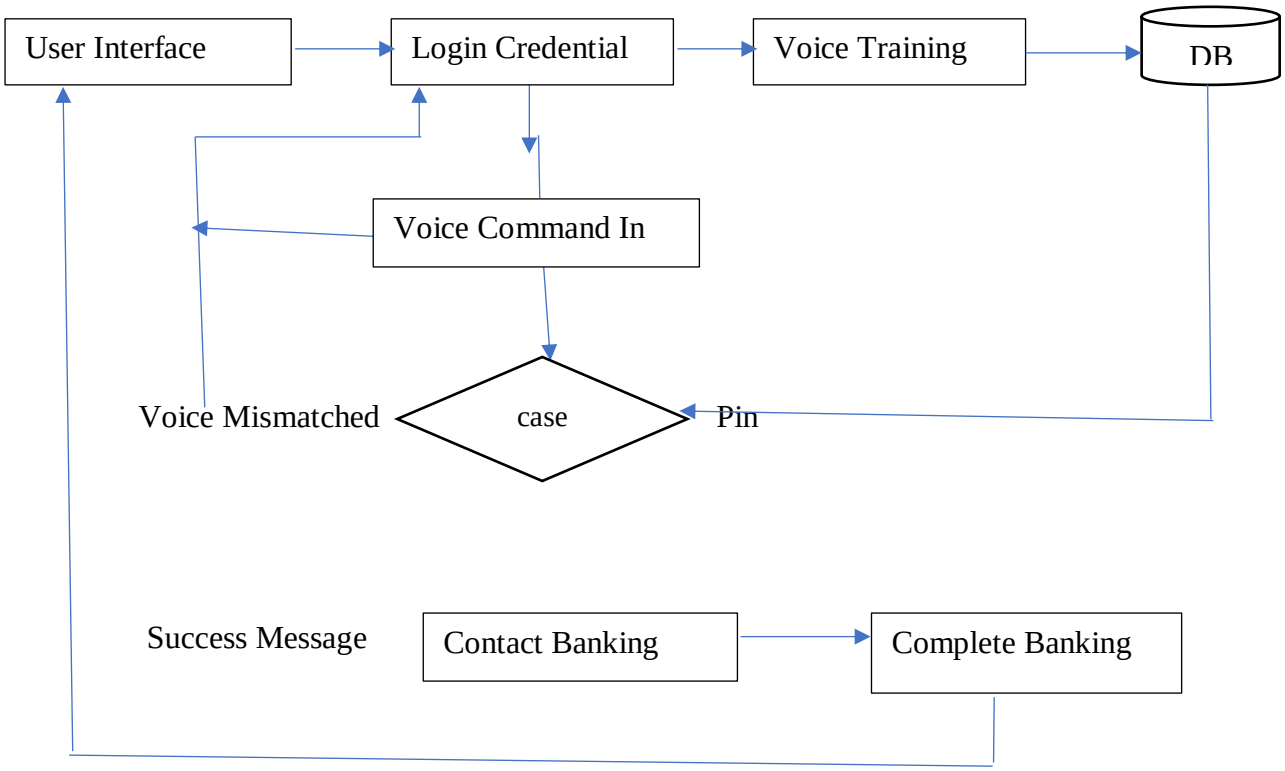

Fig. 4.2.Entire Architecture

5. Result

Since it was an ideology model we have came up with the implementation technologies so that any others who refers to our paper could make use of our conceptations along with their own concepts to get their desiered outcome in achieving their model goal.

6. Conclusion

Now we can conclude by saying that we have developed an ideology that can make the internet banking system more easier and advanced by using simple voice command based so that a single voice note can be able to make bigger transaction but only by means of safety and securable way with less time consumption. It will be very much useful for the blind or specially abled people.It does not require any external software for its use.It gives better user experience and it will be faster when compared to other banking systems.As we are using NLP,it require less maintainance therefore

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reducing cost and have better data analysis.We state the conclusion that our ideology gives the fastest,easiest and secure way of banking.

6.1 Future Work

Future works Includes the working condition to make the system in a better usage for the client and user

In the following ways:

- It can be developed and integrated into an Android Application
- It can make the advanced system by making implementation of Latest technologies.
- Adding this feature in mobile banking app of every banks apps**.**
- System can made more securable by encryption Algorithms.
- End-End Verification system can be applicable if possible.
- Making the system Available for every types of OS.

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