

Intelligent Chat Bots: An AI Based Chat Bot For Better Banking Applications

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Abstract— A text-based and audio-based chat and voice assistant for a banking application that is powered by artificial intelligence and does conversions that are designed to resemble human conversations. Chat and voice assistants have come a long way from their humble beginnings, with advances in machine learning and natural language processing enabling them to learn from their interactions and hold conversations in a human-like manner. Becoming more human can help with calculating loan interests and checking transaction details and savings, among other things. Chat and voice assistants have come a long way from their humble beginnings. Conversational banking is an improved method for retaining loyal customers because it enables the bank to respond more quickly to the customers' inquiries. The Stone Age was followed by the Bronze Age, and now we are in the Digital Age thanks to the advancement of technology. When it comes to customer behaviour, the transition from being a service seeker to a game-changer is happening at a very rapid rate. Those days are long gone when a company could still get away with putting the requirements of their customers lower on their priority list. Since the customer is now the person who ultimately decides whether a company will succeed or fail, it has become the top goal of any company to make certain that the needs and desires of the customer are met to the greatest possible extent.

Keywords- Artificial Intelligence, semantic variants, Interactive voice response, Financial Services, Customer Value, and Chatbots

I. INTRODUCTION

It is amazing to see how quickly technology is advancing and revolutionising several industries. We now have digital voice assistant technology to anticipate after the early rumblings of IoT (Internet of Things), AR (Augmented Reality), VR (Virtual Reality), and Cloud computing. Banking, financial services, and insurance have seen the most growth in the information technology sector (BFSI). The term "digital voice-enabled assistant" may not be new to you given how machine learning, artificial intelligence, data analytics, and cloud computing are combined. You may have heard about the benefits of having a personal assistant to help you plan and control your daily activities. In this case, the idea of voice-based services goes well beyond only providing individualised support to affect the banking industry as a whole. Since they enable consumers to carry out banking chores on their mobile devices without requiring personal encounters, people have been utilising finance applications for personal banking for a long time. However, a lot of us were unaware that digital

voice banking was preparing to become more pervasive and ingratiate itself into consumers' daily lives. Technology has a huge role in both daily routines and business. It is used in many different ways and for many different applications around the world. The general public has recently become fascinated by artificial intelligence. In many aspects, artificial intelligence imitates human intellect. AI Chatbots are already in use, and this kind of software is replacing human responses. Since then, they have become Accurate and Relatively Human-like. A chatbot is a computer programme that communicates with users by using colloquial language. This particular sort of virtual assistant has recently become quite popular, partly as a result of Considerable Advances in AI, ML, and other fundamental subjects like neural networks and natural language processing. These chatbots effectively communicate with any human via interactive questions. Recently, there have been a lot more cloud-based chatbot services made accessible for the design and development of chatbots. Clever Bot, IBM Watson, ELIZA Chatbot, and numerous other examples serve as examples. The art of interacting with robots has greatly improved over the past few years as they have become more perceptive chatbots.

II. RELATED WORKS

It might be challenging to provide adequate assistance and service to customers. Customers who buy things online, make payments, and have questions connected to products desire good customer service so that their questions can be answered. Customers who buy products online also make payments. People typically communicate with the customer executive via telephone in the traditional sense. The clients have to wait in line for a significant amount of time before their request can be completed because this procedure takes a significant amount of time. The clients become upset when they are required to repeatedly lodge the same complaint or ask the same question, and when they do not obtain a response for several days. Additionally, there is an increase in expenses associated with the cost of phone interaction between the consumer and the executive. Therefore, in order to resolve this issue, we have implemented chatbots, which are computer programmes that we are able to communicate with through text, voice, or chat. Chatbots powered by artificial intelligence (AI) can get businesses closer to their goal of providing effective and automated customer support, which in turn can lead to increased levels of customer engagement and comprehension [1]. According to Dr. Wallace, the most significant market for chat bots is likely the entertainment industry. Inside this industry, we can envision chat bots functioning as talking books for children, offering training in multiple languages, or serving as tutors within an intelligent tutoring system. In one of these studies, the participants were Chinese university students who were working on improving their English conversational abilities using an ALICE system. The research was qualitative in nature and made advantage of the participants' existing English conversational abilities [2]. The first well-known chatbot was named Eliza, and ALICE was an important subsequent development. Both the Loebner

Prize and The Chatterbox Challenge are examples of annual competitions that may trace their beginnings back to TIG. On the other hand, these tests often solely involve the use of text, despite the fact that some restricted visual components are frequently included. This concentration is on; however, whether with only the text interaction alone, we are able to recreate human "behaviour" [3]. The use of conversational aids is becoming increasingly commonplace in modern life. Tools that are simple to work with, such as Rasa Core and Rasa Natural Language Understanding (NLU), can be used to construct conversational systems. [4] Rasa is a necessary collection of tools for developing AI assistants and chatbots that are more sophisticated and effective. The user is provided with high-performance, resilient, and proprietary intelligent chatbots that are functional thanks to Rasa's infrastructure and tools, which are a benefit of the platform. All developers can benefit from Rasa's assistance in creating better text- and voice-based chatbots. The NLU that Rasa offers provides assistance to developers by providing the essential technology and tools for gathering and comprehending user input, as well as establishing the intent and entities involved. Rasa is able to support a wide variety of languages, a single or multiple intents, as well as bespoke entities and pretrained entities. [5] Rasa is an open source framework for the construction of artificial intelligence bots. The Rasa open source framework is made up of two different parts: the Rasa NLU and the Rasa core. Rasa NLU and core can be utilised separately from one another, despite the fact that Rasa promotes using both of them together. The Rasa core is the component of the framework that manages the framework's dialogue engine and provides assistance in the development of more complicated chatbots that may be customised. Rasa offers students the chance to engage in learning that is interactive. Because the Rasa framework offers a variety of flexible options, chatbots can be improved using those options. The chatbot can be quickly installed, integrated, and connected to websites and applications thanks to its intuitive design. [5] Because Rasa is built on an open-source architecture, it offers a high degree of convenience and is simple to personalise. The vast majority of the existing chatbot frameworks run entirely in the cloud and offer their services as software as a service. It is not the desire of businesses, companies, or customers to have their data shared via the cloud or any other third-party service. Rasa is the ideal solution for situations in which you do not wish to transmit your data to an external device. We went with rasa as our framework of choice because it is not depending on the cloud and it allows for easy customization. The user is given the ability to construct, host, and deploy Rasa locally on our server or within our environment. Installing Rasa on our very own server is one way to improve the data's level of protection. When it comes to installing the chatbot, Rasa offers improved control as well as greater flexibility. Because it is both free and open source, it is an excellent option for the construction of chatbots. [6]

III. EXISTING ARCHITECHTURE

Recall the days when we relied on interactive voice response (IVR) customer care and assistance to find solutions to difficulties relating to problems with computers or mobile services. It was surprising how we used to engage with our mobile gadgets and type on the glass screens to share our concerns with one another. On the other hand, not everything ran quite so smoothly and effectively every time a new strategy for providing customer care was implemented. The fact that the majority of IVR systems did not have capabilities for rapid problem learning or problem-solving was a significant challenge. They lacked the capacities of learning that a virtual voice assistant in today's world acquires over the course of time. In addition, typing was not the most productive way to connect with a gadget or a computer for the majority of the most prevalent issues. We have come a long way from the days when even the most mundane of tasks required a significant amount of work on our part.

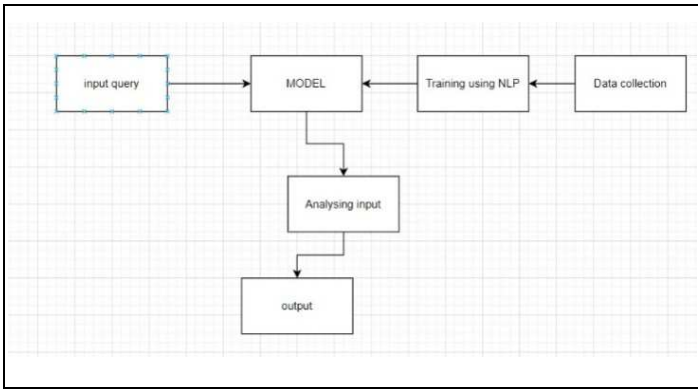


Figure 1: Existing system Architecture

Now that we are in a position to consider implementing enlightened virtual assistants, a future devoid of voice-driven AI services would appear sluggish, inefficient, and laborious in comparison. They make it possible for us to make judgements based on accurate information and resolve problems in a matter of seconds. Disadvantages of existing system system: The financial sector is becoming increasingly reliant on information systems, and the application of the most cutting-edge technology is also becoming an increasingly important factor. However, there is a noticeable absence of voice assistants in financial institutions. The same services, such as online banking and credit card processing, are offered by each and every bank. To entice people who are illiterate to utilise their banking services, financial institutions should, in addition to offering services related to business intelligence and other programmes, offer services related to voice assistants.

IV. PROPOSED ARCHITECHTURE

The Artificial Intelligence-based services include services such as an automatic chequebook re-order facility, as well as products such as customised investment advice for customers after for their portfolio analysis and customised investment solutions after evaluation of the credit history as well as

income pattern. Banks internally use them for employees' performance evaluation, credit evaluation of customers, as well as other purposes.

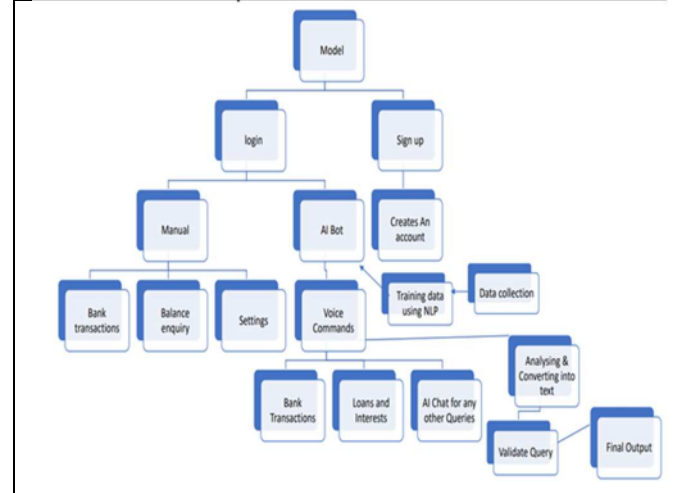


Figure 2: Proposed system Architecture Data Flow

It is a chat and voice assistant for bank applications that is driven by AI. It conducts conversations that are supposed to replicate human conversations and can do so in audio or text style. Text and voice assistants have come a long way from their humble beginnings. Thanks to advancements in machine learning and natural language processing, they are now able to "learn" from previous interactions and hold conversations with human-like behaviour. As a result, they have become more "human." Text and voice assistants can also help with calculating loan interests and checking transaction details, saving money, and other similar tasks.

A. Detailed and personalized conversations

It would not be fair to a financial chatbot to restrict customisation to the customer's name alone as the only available option. The huge volumes of data that the bank collects can be used by chatbots to help adapt the bank's marketing activities. Instead of marketing being done at random, chatbots can be programmed to market based on the requirements of the customers. It is made abundantly obvious in the piece titled "Every Bank Requires a Chatbot for Digital Transformation" that chatbots are essential for the digital transformation of banks.

B. Data storage and management

The information that banks hold on their customers is vast and varied. On the other hand, the material is so disorganised that customer service agents need to navigate their way through a number of files and folders before they can even begin to appreciate the nature of the query. In the banking industry, chatbots have the ability to collect, store, and arrange data in a way that makes it easier to resolve queries. In addition to that, customers may receive assistance from chatbots in the form of guidance. The data collected by chatbots can be used for the administration of personal finances (PFM).

C. Avoids peak times

Chatbots are able to provide constant responses regardless of the number of people requesting information at any one time, which means they can assist you in avoiding busy periods and so saving time.

D. Consistent Response Rate and Availability

In addition to helping you retain productivity during peak periods, chatbots also help us maintain regular response rates and time frames for your organisation. This is a significant benefit for both parties. As a result of the fact that bots of this type may successfully operate in either large or low numbers, you will be able to enhance your customers' overall experience with your company. Customers won't have to wait on line for long periods of time to get their questions answered.

E. Lower Costs

Last but not least, implementing chatbots in your company will help your business save money. As a business owner, you will need to spend thousands of dollars to both attract and train each new employee that you bring on board. On the other hand, chatbots can manage a greater number of client conversations at a lower cost. This suggests that you would not require as many employees in your customer care department as you currently do. Additionally, because of this, your live agents are freed up to concentrate more on higher-value contacts, which enables your organisation to produce more revenue over the course of time.

V. CONCLUSION

The world of digital technology is rapidly incorporating chatbots into its fabric. It is essential for the demands of the consumer to be met, and it is the responsibility of the business to fulfil the requirements of the client. The ever-increasing pace of technology advancement is leading to higher customer expectations. Businesses and other types of organisations place a significant emphasis on achieving high levels of customer satisfaction for the simple reason that clients who are unhappy with the services they receive rarely come back. A chatbot is a term used to refer to a piece of software that can simulate human conversation. They listen carefully, and their responses are always well thought out. There are currently available digital assistants that can be triggered via speech, in addition to chatbots that can be engaged via voice or text. Bots can behave differently depending on the manner in which artificial intelligence is implemented on the backend. This makes it possible for businesses to provide clients more than just straightforward logical solutions. Chat software, which frequently gives the impression that only one person is participating in the conversation, is considered to be inferior to chatbots. Chatbots are more conversational in nature, whereas digital or intelligent assistants go beyond the capabilities of chatbots to carry out actions that are helpful to the user. When it comes to the self-service choices that banks offer, the vast

majority of customers go into the experience with extremely low expectations because these options are typically subpar. The customer must regularly call the call centre in order to complete the self-service transaction.

REFERENCES

- [1] Conversation-to Automation in Banking Through Chatbot Using Artificial Machine Intelligence Language By [Silvia García-Méndez](#) [atlanTTic](#), Information Technology Group, School of Telecommunications Engineering [Milagros Fernández-Gavilanes](#) Defense University Center, Pontevedra, Spain on 14 march 2018 [Online]. Available: <https://ieeexplore.ieee.org/document/9197825>
- [2] Artificial Intelligence for Futuristic Banking by [Moksha Thisarani](#), Faculty of Information Technology, University of Moratuwa, Sri Lanka, [Subha Fernando](#), Faculty of Information Technology, University of Moratuwa, Sri Lanka on 21 June 2021 2018 [Online]. Available: <https://ieeexplore.ieee.org/document/9570253>
- [3] An intelligent web-based voice chat bot by S. J. du Preez, Student Member, M. Lall, IEEE, S. Sinha, MIEEE, MSAIEEE. [Online]. Available: <https://ieeexplore.ieee.org/document/5167660>
- [4] Maruti-tech-labs, —Does banking need digital voice assistant? [Online]. Available: <https://marutitech.com/banking-need-digital-voice-assistant/>
- [5] Dr. Munish Sabharwal, —The use of AI- based technological applications [Online]. Available: https://www.academia.edu/26053536/_The_use_of_Artificial_Intelligence_AI_based_technological_applications_by_Indian_Banks_
- [6] Blake Morgan, —5 Ways Chatbots Can Improve Customer Experience in banking [Online]. Available: <https://www.forbes.com/sites/blakemorgan/2017/08/06/5-ways-chatbots-can-improve-customer-experience-in-banking/#71422ba97148>
- [7] IBM Cloud Education, —Chatbots [Online]. Available: <https://www.ibm.com/cloud/learn/chatbots-explained#toc-building-a-pWei9Ux1>
- [8] GhatteSaquid Nisar Parvin and KaziFaizan Farook Farida, —Chatting Bot Service Provider [Online]. Available: <http://www.aiktdspace.org:8080/jspui/bitstream/123456789/2051/1/aiktdspace2051>
- [9] M. Dahiya, —A Tool of Conversation: Chatbot, International Journal of Computer Sciences and Engineering (IJCSSE), Vol-5, Issue-5, 30/May/2017. [Online]. Available: https://www.ijcseonline.org/pub_paper/27-IJCSSE-02149.pdf
- [10] FloatBot blog about —Voicebot: A voice bot guide for 2019 [Online]. Available: <https://floatbot.ai/blog/voicebot-a-voicebot-guide-for-2019>
- [11] Ozonetel blog —6 Features Your Voice Bot Needs for Smooth Conversations [Online]. Available: <https://ozonetel.com/blog/6-features-voice-bot-smooth-conversations/>
- [12] IBM Knowledge Centre —About IBM Voice Gateway [Online]. Available: <https://www.ibm.com/support/knowledgecenter/en/SS4U29/about.html> Computer and Information Science, pages 575-580, 2008.