# AI BASED DISCOURSE IN BANKING INDUSTRY

## Abstract:

Chatbot is a software application that listens to a user's query in natural language and responds accordingly. There is rapid adoption of the latest technologies in banking and chatbots are one of them. Answering customer queries and assisting customers with banking transactions are some of the ways in which it's making an impact on the industry. This paper discusses the anatomy of chatbots and its applications in the banking sector. Improvements to current chatbot technologies are also suggested.

Keywords— Chatbot; natural language processing; banking; banking chatbot.

# I. INTRODUCTION

Industries are forced to evolve and update their practices due to technological advances and the contemporary market. Banking sector is one of the most developed sectors and is always looking for the latest technological solutions that improve its efficiency.

Netbanking websites are complex and involve navigating through a lot of pages to find the information you need. Bank staff undergo a lot of stressful situations when communicating with clients directly. Such situations can be avoided gracefully by using chatbots.

Only 32% of companies in the finance industry currently use AI chatbots, and 37% are planning to start using them within 18 months said a report from Salesforce. This results in a potential growth rate of 118% which indicates the demand in the industry .

A smart chatbot takes a query from the user in natural language and gives the appropriate response for the same. This paper aims to discuss the relevance of chatbot in the banking sector and explore how chatbots can be implemented using natural language processing techniques that can be used in the banking industry.

# II. ANATOMY OF A CHATBOT

1) **User Interface**: It is used to take input query from the user.

2) **User message analysis component**: It parses the user input message to infer the intent and extract the associated entities.

3) **Dialogue Manager**: The context of a conversation is kept and updated by it using which it decides the action to be taken for the user input.

4) **Data sources**: It includes the data of interest taken from various data sources, which can be present within a database, known as the knowledge base of the chatbot or external resources that can be accessed through API calls.

 5) **Response generator**: It prepares responses in natural language which are sent to the user. This is primarily based on the intent and context information returned from the user message analysis component.

# III. Chatbot background

In 1950, Alan Turing wondered if a computer program could talk to a group of people without realizing that their interlocutor was artificial. This question, named Turing test, is considered by many to be the generative idea of chatbots (Turing, 1950). The first chatbot with ELIZA name was constructed in 1966. ELIZA simulated a psychotherapist's operation, returning the user's sentences in the interrogative form Weizenbaum (1966). Its ability to communicate was limited, but it was a source of inspiration for the subsequent development of other chatbots (Klopfenstein et al., 2017). ELIZA uses pattern matching and a response selection scheme based on templates (Brandtzaeg & Følstad, 2017). A drawback of ELIZA is that its knowledge is limited, and therefore, it can discuss only in a particular domain of topics. Also, it cannot keep long conversations and cannot learn or discover context from the discussion.

The development of Artificial Intelligence chatbots went one step further with the creation of smart personal voice assistants, built into smartphones or dedicated home speakers, who understood voice commands, talked by digital voices, and handled tasks like monitoring home automated devices, calendars, email and other. Apple Siri (Siri), IBM Watson (*Watson Assistant |IBM Cloud, 2020*), Google Assistant (*Google Assistant, your own personal Google, 2019*), Microsoft Cortana (*Personal Digital Assistant—Cortana Home Assistant—Microsoft, 2019*), and Amazon Alexa (*What exactly is Alexa? Where does she come from? And how does she work?, 2019*) are the most popular voice assistants. There are also

many other less famous voice assistants owing unique characteristics, but the same core functions. They connect to the Internet and, in contrast to their predecessors, they create quickly meaningful responses ([Hoy, 2018](#)).

# IV. IMPROVEMENTS TO CHATBOT SYSTEM

This section discusses the ways in which improvements can be made to the chatbot in order to be more effective.

conducted a study on improving chatbot conversations by doing a manual analysis of the conversations. To improve the prediction of existing intents, using more and better training data was suggested. It also advised, if an entity was used in a sentence like a phone number or account number, the chatbot should also be able to search it's backend for the entity without starting with general intent and ask clarifying questions to give a personalized and precise answer. It was noted that when using button responses to interact with the chatbot, proper phrasing of the text within the buttons should be used. False positive cases of intent prediction can be prevented by improving the training data.

User initiated dialogues are error prone because users can say anything they want. To tackle this issue without making the conversation lengthy suggests using implicit confirmations where the user's input is used in the following system output and extra information is added to it. For example, when the user wants to transfer ₹10000, the chatbot can say "So you want to transfer

₹10000. What mode do you want to use to transfer the amount?" In this way, the user will be able to identify and correct the chatbot if it didn't recognise the user's intent correctly.
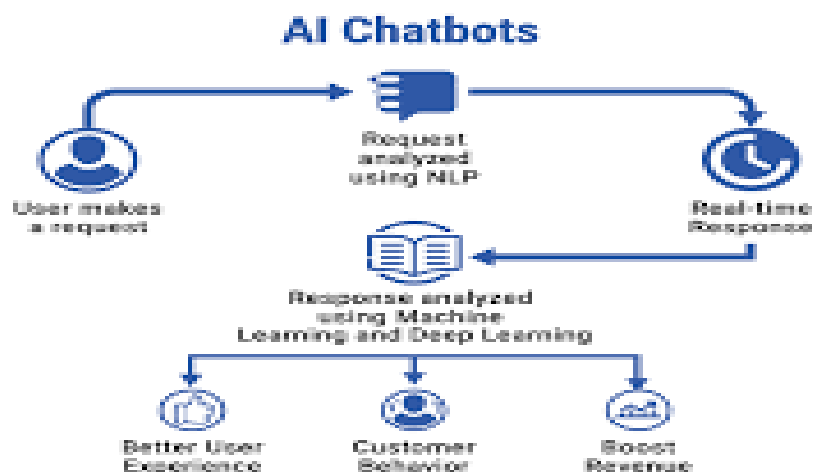
# Merits of chatbot

- ➢ 24x7 customer service availability
- ➢ Increases productivity of bank personnel
- ➢ Personalized marketing
- ➢ Response generation

# Demerits of chatbot

- ➢ Implementing the proper algorithm
- ➢ Expensive
- ➢ Data security

## Diagram:

# Conclusion

Chatbots are being adopted in the banking sector at a very fast rate. They are not only being used for answering customer's questions but also for providing a wide range of services which include bill payment, fund transfer, view recent transactions and much more. Chatbots are also getting smarter due to integration of natural language processing and machine learning. By helping customers round the clock, they help banking staff focus on other important tasks. Therefore, we can say that chatbots have become an essential part of the banking system. In this paper we have discussed the role chatbots play in the banking sector, the anatomy of chatbots and advantages of using chatbots in the banking sector.

# References

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# A Literature Survey of Recent Advances in Chatbots

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