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TALKING CHATBOT USING PYTHON

A MINOR PROJECT - III REPORT

Submitted by

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BONAFIDE CERTIFICATE

Certified that this **18ECP105L - Minor Project III** report "TALKING CHATBOT USING PYTHON**"** is the bonafide work of "**G.PAVITHRA(927621BEC143), V.PRIYADHARSHINI(927621BEC155), G.NANDHINI(927621BEC131)**" who carried out the project work under my supervision in the academic year **2023-2024 - ODD**.

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PROJECT COORDINATOR

INSTITUTION VISION AND MISSION

Vision

To emerge as a leader among the top institutions in the field of technical education.

Mission

M1: Produce smart technocrats with empirical knowledge who can surmount the global challenges.

M2: Create a diverse, fully -engaged, learner -centric campus environment to provide quality education to the students.

M3: Maintain mutually beneficial partnerships with our alumni, industry and professional associations

DEPARTMENT VISION, MISSION, PEO, PO AND PSO

Vision

To empower the Electronics and Communication Engineering students with emerging technologies, professionalism, innovative research and social responsibility.

Mission

M1: Attain the academic excellence through innovative teaching learning process, research areas & laboratories and Consultancy projects.

M2: Inculcate the students in problem solving and lifelong learning ability.

M3: Provide entrepreneurial skills and leadership qualities.

M4: Render the technical knowledge and skills of faculty members.

Program Educational Objectives

PEO1: **Core Competence:** Graduates will have a successful career in academia or industry associated with Electronics and Communication Engineering

PEO2: **Professionalism:** Graduates will provide feasible solutions for the challenging problems through comprehensive research and innovation in the allied areas of Electronics and Communication Engineering.

PEO3: **Lifelong Learning:** Graduates will contribute to the social needs through lifelong learning, practicing professional ethics and leadership quality

Program Outcomes

PO 1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO 2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO 3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO 4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO 5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO 6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO 7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO 8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO 11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes

PSO1: Applying knowledge in various areas, like Electronics, Communications, Signal processing, VLSI, Embedded systems etc., in the design and implementation of Engineering application.

PSO2: Able to solve complex problems in Electronics and Communication Engineering with analytical and managerial skills either independently or in team using latest hardware and software tools to fulfil the industrial expectations.

Abstract	**Matching with POs, PSOs**
Artificial Intelligence Markup Language(AIML), Pycharm.	**PO1, PO2, PO3, PO4,PO5, PO6,PO7, PO8, PO9, PO10, PO11,PO12, PSO1,PSO2**

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ABSTRACT

Over the last ten years there has been a growing interest around text-based chatbots, software applications interacting with humans using natural written language. However, despite the enthusiastic market predictions, 'conversing' with this kind of agents seems to raise issues that go beyond their current technological limitations, directly involving the human side of interaction. By adopting a Human-Computer Interaction (HCI) lens, in this article we present a systematic literature review of 83 papers that focus on how users interact with text-based chatbots. A chatbot enables a user to simply ask questions in the same manner that they would respond to humans. The most well-known chatbots currently are voices chatbots: SIRI and Alexa. However, chatbots have been adopted and brought into the daily application at a high rate on the computer chat platform. NLP also allows computers and algorithms to understand human interactions through various languages. Recent advances in machine learning have greatly improved the accurate and effective of natural language processing, making chatbots a viable option for many organizations. This improvement in NLP is firing a great deal of additional research which should lead to continued improvement in the effective of chatbots in the years to come. A bot is trained on and according to the training, based on some rules on which it is trained, it answers questions. It is called ruled based approach. The language by which these bots can be created is Artificial Intelligence Markup Language (AIML) and the software used is Pycharm. It is a language based on XML which allows the developer to write the rules which the bot will follow. In this research paper, We are trying to understand these chatbots and understanding their shortcomings. question or statement submitted by a user and allow the user to control over the content to be displayed.

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LIST OF ABBREVIATIONS

ACRONYMS		ABBREVIATION
AIML	-	Artificial Intelligence in Machine Language
LSTM	-	Long Short-Term Memory
NLPs	-	Natural Language Processing
FAQs	-	Frequently Asked Questions
CSIEC	-	Computer Simulation in Educational Communication
NLUs	-	National Law University
CHATBOT	-	Chatter bot

CHAPTER 1

INTRODUCTION

Recently, we have witnessed a growing interest around conversational agents, software applications interacting with humans using natural language. In particular, over the last ten years text-based CHATBOTS, which enable interaction of humans with machines through natural written language, have spread in a variety of application domains, so that it has been talked about a “CHATBOT tsunami”. This spreading is driven by flexible platforms that support their design, as well as the possibility of their seamless integration into existing websites and applications. Cloud-based cognitive services of composable Artificial Intelligence (AI) building blocks, like the IBM Watson Developer Cloud, can be used by developers to easily build new CHATBOTS, by training the AI to respond to questions posed in natural language about particular intent. Given this technological availability, it comes as no surprise that investments in CHATBOTS took off. In 2018, more than 300,000 CHATBOTS were said to be active on Facebook Messenger alone predicted that by 2022, 85% of customer service interactions will be powered by CHATBOTS. These trends did not go unnoticed by scholars, who started researching how people interact with this technology. Such research has been considered important also because, despite the initial hype and the enthusiastic market predictions, conversing with artificial agents raises issues that go beyond their current technological limitations, rather involving the human side of interaction.

1.1. OBJECTIVE

- To make CHATBOT easy for users.
- To find information by instantaneously responding to questions and requests through text input, audio input, or both without the need for human intervention or manual research.

1.2. Chat bot system Architecture

1.2.1. Customer Service Chat bot via Deep Learning

The conversation between users and customer service agents on social media can be viewed as mapping one sequence of words representing the request to another sequence of words representing the response. Deep learning techniques can be applied to learn the mapping from sequences to sequences.

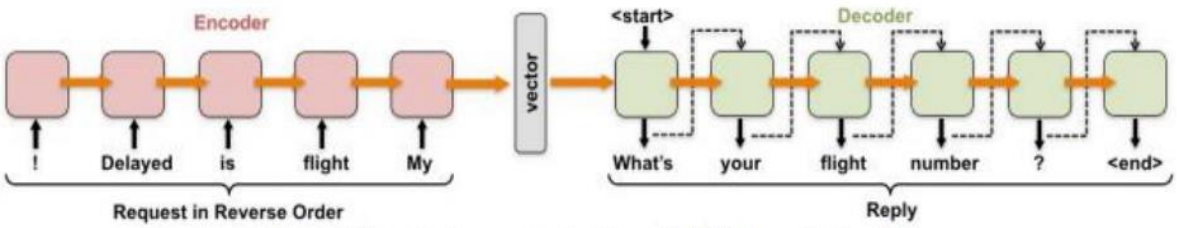
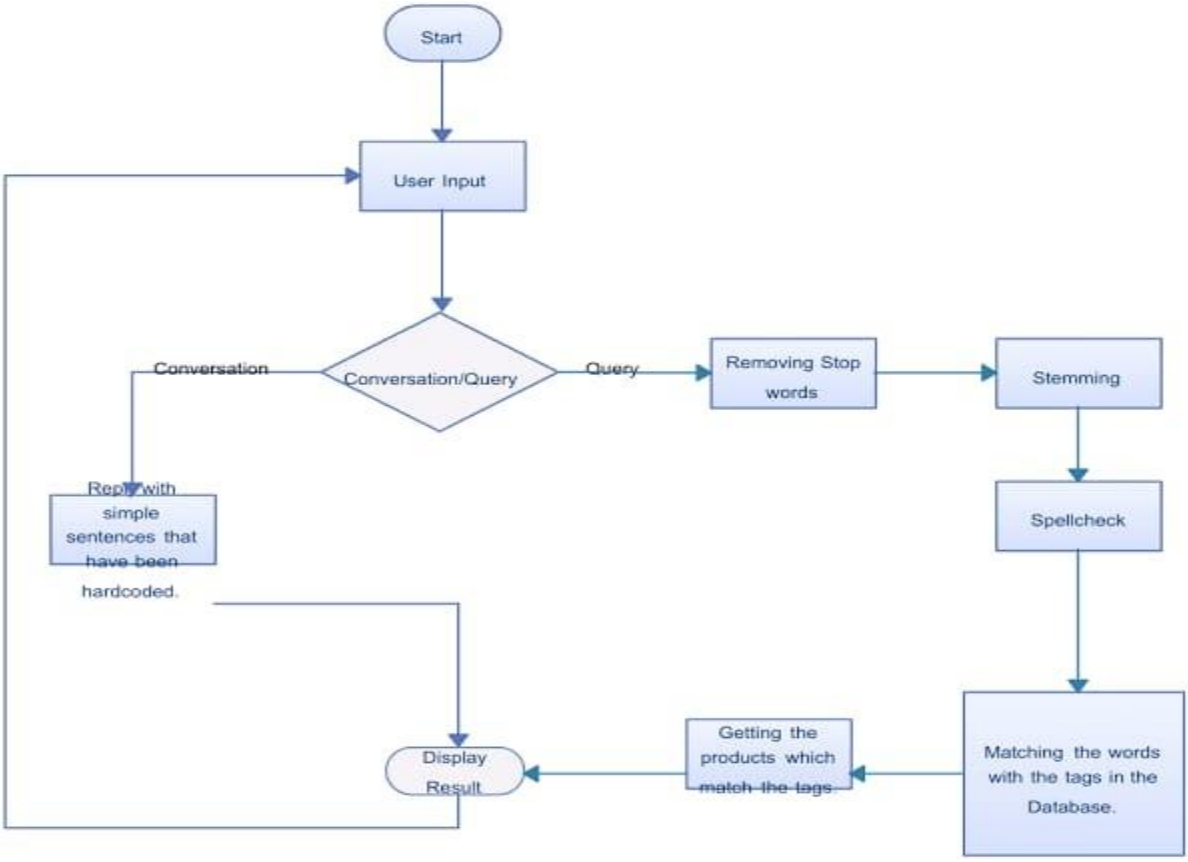


Figure 1. Sequence-to-sequence learning with LSTM neural networks.

1.2.2. Sequence-to-Sequence Learning

The core of the system consists of two LSTM neural networks: one as an encoder that maps a variable-length input sequence to a fixed-length vector, and the other as a decoder that maps the vector to a variable-length output sequence.

1.3. BLOCK DIAGRAM



1.3. BLOCK DIAGRAM OF TALKING CHATBOT

1.4. Types of CHATBOT

CHATBOTS can be classed using other variables, such as the interaction level and how responses are generated [6]. The first type of CHATBOT is a domain of knowledge classified according to the knowledge available to them or the amount of data trained. They are further classified into Open Domain and Closed domain. Open-domain bots can address general topics and answer them appropriately. Closed domain bots focus on one specific area of knowledge and may not answer other questions. For instance, a flight booking Bot won't tell you the name of Canada first President. It may tell you a joke or reply the way your day is, but it is not meant to do any other tasks, considering that its job is to book a flight and give

the user all the necessary information about the booked flight [6]. The second one is service provided; these Bots are sentimental proximity to the user, how much intimate interaction occurs, and depends on the Bot's task. Further classified into Interpersonal, Intrapersonal, and Inter-agent. Interpersonal bots are for communication and allow services such as Table booking in Restaurants, Train booking, FAQ bots, etc. These CHATBOTS are supposed to get information and pass it on to the user. These types of BOT can become user-friendly and likely to remember previous information about the user. Intrapersonal bots will exist in the user's personal domain, such as chat applications like Facebook messenger, Telegram, and WhatsApp, and perform tasks under the user's intimate part. Managing calendar, storing the user's opinion, etc. They will become the companions of the user and understand the user as a human [6]. Inter-agent bots are becoming ubiquitous as all CHATBOTS require opportunities for intercommunication. There is an emerging need for Inter-agent CHATBOT protocols for communication. The Alexa-Cortana integration is one example of an Inter-agent BOT [5]. The third type of Bot is goal-based Bot; these Bots are categorized according to the primary purpose they are intended to achieve. Further classify into Informative, Conversation and Taskbased Bot. Informative bots provide the user with intel or data from a fixed database, like the FAQ BOTS and inventory database at the warehouse [6]. Conversational / Text-based bots try to speak with the user as another human being, and their purpose is to appropriately respond to the user's requests. As a result, their goal is to pursue the user's conversation using techniques such as cross-questioning, avoidance, and politeness, for instance: Alexa and Siri [6]. TaskBased bots carry out a particular task, such as booking a room in a motel or assisting somebody. These CHATBOTS are smart when it comes to requesting information and comprehending user input. Booking a room in a motel and Reservation of Table at a Restaurant is an example of a Task-based Bot. The fourth type of Bot is based on how the response

generates and method for generating responses considers the technique for processing inputs and generating response and they are Intelligence Method, Rule-based system and Hybrid. Intelligence Methods are knowledgeable systems to generate responses, and they use the natural language understanding (NLUs) component to comprehends the user's query. Such systems are used where a narrow domain and sufficient data exist to form a network system. Rule-based system bots interact with users with the defined outline trees. It is a flowchart where conversations are predicted in such a way as to anticipate what a client might ask and how the Bot should respond. Hybrid systems are the combination of rules like Algorithms and machine learning. For instance, a system uses an outline flow chart to manage conversation direction, but they use natural language processing (NLPs) to respond [6].

1.4.1 Advancement in CHATBOT and Filed CHATBOT

Used there is the various domain in which CHATBOT is used such as Customer service, Feedback, Education, Business, Railway, etc. Some of the most common examples are: HUMAN-TYPE ACADEMIC INTERACTIVE ROBOT BASED ON ARTIFICIAL INTELLIGENCE AND THE WEB[9]. Generally, when students have to admission to any college, they have to visit universities or colleges to gather various information like Tuition Fees, Hostel Fee, Library, Term Schedule, etc. It is a time-consuming process, which requires human presence to give a visit to collect the required information. As a result, CHATBOT has been developed. This project aims to interact between users and Academic CHATBOT, accessed from anywhere, anytime. The CHATBOT can be easily integrated with a university or college website with few simple language conversions. MARKETING THROUGH ARTIFICIAL INTELLIGENCE CHATBOTS [10]. Using AI in the marketing team's field to create highly personalized human touch

experiences costs less than expensive, compared to traditional marketing pamphlets, newspaper articles, and campaigns. Artificial intelligence has transitioned from a science fiction concept to today's real technology. Using AI in industries and marking organizations can produce more consumer orient products, consumer-oriented services, accurate target market, and audience results in a higher conversion rate and fully meet their customers' needs. CSIEC: A COMPUTER ASSISTED ENGLISH LEARNING CHATBOT BASED ON TEXTUAL KNOWLEDGE AND REASONING [11]. English is a very well-known international language key tool for developing and for cross-cultural communication ability. In China, the English language is now listed as one of the three core courses in elementary and secondary education and a compulsory course in higher education. To make more awareness amongst student, (CSIEC) system with English instruction functions acts virtual chatting partner (CHATBOT), which chat in English with the English learner's students anytime, anywhere. According to the user, input knowledge such as dialogue, personality, experience, common sense, and inference knowledge generate a communicative response with the learner. DEVELOPMENT OF A CHATBOT FOR THE COLLEGE CURRICULUM COUNCIL [12]. Elective courses' selection is challenging for students to make decisions considering their very interests, class schedule, syllabi to study, difficulty level, and help after graduation plans. Generally, having conversations with academic officials and peers seeks to get official and informal information, rearrange priorities, and compromise the decision. EASElective is AI Bot designed where existing educational advising services uploaded and set up an online natural language interactive interface that will support a conversation with officials to provide course data to informal students' opinions. Telegram chatbot for smart workspace based iot with artificial intelligence [13]. The concept of IOT allows us to take advantage of internet connectivity continuously. IOT has abilities that include sharing data, remote control, and controlling several electronic devices

on the workspace through the internet, such as a lamp, fan, AC, washing machine, electrical outlet, and temperature check. This research was carried out using ESP 8266 remote control devices to access local control using Artificial Intelligence CHATBOT by using Telegram Messenger. This made it easier for employees to control several electronic devices on their respective workspace through smartphones or PCs without manually switching ON or OFF and going back to the office to turn off or turn on the lights. As a result, this workspace is called Smart Workspace. INTELLIBOT: A DIALOGUE-BASED CHATBOT FOR THE INSURANCE INDUSTRY [14]. CHATBOT is now being used in various businesses to provide their customers with a virtual assistant to answer their requested questions. Using AI Bot, companies can develop an improvised way to connect with their retail and corporate customers and increasing customer satisfaction. For customers, the organization provides a better and convenient way of conversing with company peoples without waiting on the phone or sending many emails. In countries such as South Korea, China, Japan, Singapore, India, and the USA, CHATBOTs is the customers' preferred platform for communication with a business. MULTILINGUAL CHATBOT WITH HUMAN CONVERSATIONAL ABILITY [15]. Most of the CHATBOTs support the English language only, and very few have the skill to communicate in multiple languages. So designers come up with the idea of developing CHATBOT that can speak or talk in many languages as google translator. Aim to create virtual assistants that converse more like human to human rather than human to the Bot and communicate in multiple languages. As technology develops, new approaches come into the market to build various types of CHATBOT. There are various new services [16] to add to CHATBOT to make it interesting, such as Deploy CHATBOT in Google Assistant, Alexa. Make a 3D avatar CHATBOT and publish it on the website using Amazon Sumerian. Design of CHATBOT with 3D Avatar, Voice Interface, and Facial Expression [17]. 3D CHATBOT IN HIGHER

EDUCATION, HELPING STUDENTS WITH PROCRASTINATION AND STUDY PLANNING PROBLEMS [18]. The bachelor's degree has many motivated and passionate students. Though the task is high in colleges, it becomes difficult for all students to meet all the curriculum requirements and maintain a balanced healthy work/life. The study program is open to all students, and, as a publicly funded institute, the organization often does not care to monitor students and help them achieve their objectives. As a result, the organization comes up with the idea of developing a 3D CHATBOT that helps students and acts as a coach. Learning management integrate virtual 3-D avatar to their web services. It utilizes cognitive therapy elements to help students overcome typical problems that afflict our students, procrastination, lack of study planning, and communication problems. This CHATBOT is so smart to make enough decisions and forward students to the correct persons if the system cannot determine the proper course of action.

2. Literature Review

i) CHATBOT for college website using python is the paper which uses the algorithm or the techniques are the greetings and basic interactions with the user. Finally the result of the project is A database was developed which stores information about questions, answers, keywords, logs and feedback messages. The future enhancement is set up more voice terminals.

ii) CHATBOT in python is the paper which using the algorithm or the techniques are The paper is basically focused on including a brief history of CHATBOTS that extends back to the earliest experiments such as ELIZA. Finally the result is the CHATBOT will be able to answer the questions outside of its dataset and which are currently happening in the real world. The future enhancement of the project is this technology will enable a client to interact with a CHATBOT in a more natural fashion.

3. EXISTING SYSTEM

- A chat bot is a computer program which conducts a conversation textual methods. Such programs are every time designed to determine how a human would behave as a conversational partner, thereby passing the Turing test.
- We can feed the CHATBOT with some questions and answers in which the CHATBOT can analyze the questions asked by the user by using natural language processing (NLPs).

4. PROPOSED SYSTEM

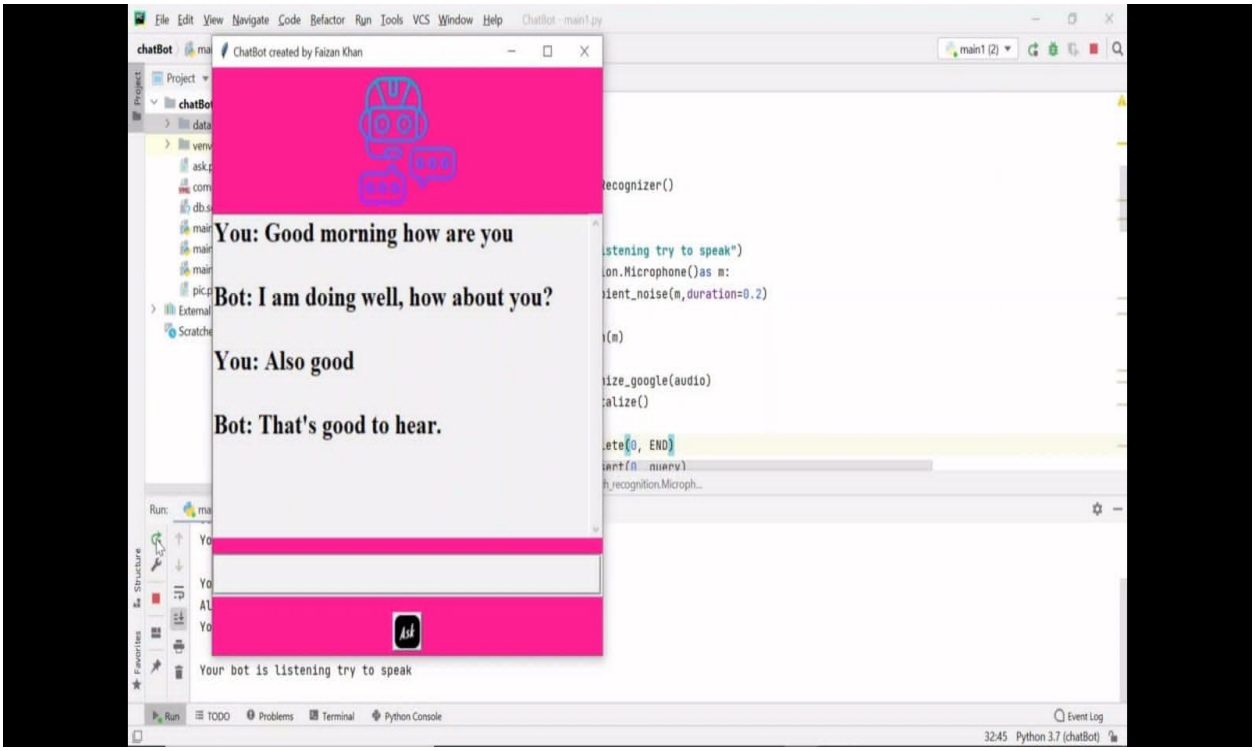
- We have proposed that the CHATBOT which conducts a conversation in a via auditory method.
- Here CHATBOT can analyze the voice using artificial intelligence and natural language processing.
- By this voice method now we can save our time in CHATBOT using python implementation.
- It is very useful to respond to customers in a second.

5. SOFTWARE USED

1. **Operating System:**
    - Windows or Linux
2. **Technology Used:**
    - PYTHON 3.7.4
    - PYCHARM
    - CHATTERBOX

6. TESTING AND FINDINGS

In the beginning of our project, we wanted to test the previous version of our CHATBOT. This was late in the fall and most of the first-year students were familiar with a lot of the answers our CHATBOT could provide. We wanted to test this early version of the prototype to get input on what the CHATBOT could and could not answer in the future. After the test was completed, we had a short interview with the participants. The main purpose for this test was to see how the participants interacted with the prototype and find out if a CHATBOT could be suitable to find the information they needed. Before the testing we also carried out a pilot test to find immediate flaws in the plan.



6.1 Result Image

7. RESULTS FROM TESTING

The first participant enjoyed talking to the bot, but stressed the fact that you had to "talk like "a dummy" for it to understand what you were asking. The participant pointed out that this really would have come in handy in his first weeks at the university, as he didn't always know who to ask - especially if he was in a hurry. He pointed out that the prototype needs to get more features like tell you current trend and discounts. The second participant was a bit frustrated that the CHATBOT wasn't flexible enough. "I don't like having to guess what questions to ask". He would like more instructions to know how to get more out of the CHATBOT. The third participant had also problems with understanding what the CHATBOT could do. When given a hint for what the CHATBOT could do, the CHATBOT did not function properly. Here we tried to restart the system and then the chatbot displayed it´s welcome message what it could do. Afterwards it was clearer what the participant could ask it, but the chatbot did not always give the response that the participant wanted.

8. DISCUSSION AND FUTURE WORK

Traditional customer service often emphasizes users' informational needs; however, we found that over 40% of user requests on Twitter are emotional and they are not intended to seek specific information. This reveals a new paradigm of customer service interactions. One explanation is that, compared with calling the 1-800 number or writing an email, social media significantly lowers the cost of participation and allows more users to freely share their experiences with brands. Also, sharing emotions with the public is considered as one of the main motivations for using social media. Future studies can examine how emotional requests are associated with users' motivation in the context of social media. Deep learning-based systems achieved similar performance as human agents in handling emotional requests, which represent a significant portion of user requests on social media. This finding opens new possibilities for integrating chatbots with human agents to support customer service on social media. We observed that a deep learning-based system was able to learn writing styles from a brand and transfer them to another. Future work can explore the functionality in a more supervised fashion by filtering the training data with certain styles and specifying the target style for output sentences. This raises new opportunities of developing impression management tools on social media. As written text from brands and individual users affect how they are perceived on social media, such a tool can help them create images of themselves they wish to present. Finally, chatbots on social media offer a new opportunity to provide individualized attention to users at scale and encourage interactions between users and brands, which can not only enhance brand performance but also help users gain social, information and economic benefits. Future studies can be designed to understand how chatbots affect the relationship between users and brands in the long term.

9. CONCLUSION

In this paper, a review of a new learning-cum assistance tool, i.e., CHATBOT, is introduced. The CHATBOT utilizes the concepts of Artificial Intelligence and Machine Learning to interact with people virtually. Firstly, the development history is reviewed, followed by an explanation of the architecture, and different CHATBOT classifications according to their utility are presented. After that, various design techniques and approaches and varying platforms of build Bot are reviewed, followed by the advancement in CHATBOT is presented. Real-life practical examples and application of CHATBOT are also presented.

APPENDICES

```
from tkinter import *
from chatterbot import ChatBot
from chatterbot.trainers import ListTrainer


bot=ChatBot('Bot')
trainer=ListTrainer(bot)

data=open('test.yaml','r',encoding='utf-8').readlines()

trainer.train(data)

def botReply():
    question=questionField.get()
    answer=bot.get_response(question)
    textarea.insert(END,'You: '+question)
    textarea.insert(END,'Bot: '+answer)
    questionField.delete(0,END)


root=Tk()

root.geometry('500x570+100+30')
root.title('Talking ChatBot')
root.config(bg='violet')

logoPic=PhotoImage(file='pic.png')

logoPicLabel=Label(root,image=logoPic,bg='violet')
logoPicLabel.pack(pady=5)

centerFrame=Frame(root)
centerFrame.pack()

scrollbar=Scrollbar(centerFrame)
```

```
scrollbar.pack(side=RIGHT)

textarea=Text(centerFrame,font=('times new
roman',20,'bold'),height=10,yscrollcommand=scrollbar.set
            ,wrap='word')
textarea.pack(side=LEFT)
scrollbar.config(command=textarea.yview)

questionField=Entry(root,font=('verdana',20,'bold'))
questionField.pack(pady=15,fill=X)

askPic=PhotoImage(file='ask.png')


askButton=Button(root,image=askPic,command=botReply)
askButton.pack()

root.mainloop()
```

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INNOVATIVE ENGINEERING AND TECHNOLOGY

INSTITUTION'S INNOVATION COUNCIL (Ministry of HRD Initiative)

05th & 06th October 2023

3 GOOD HEALTH AND WELL-BEING

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CERTIFICATE OF PRESENTATION

This is to certify ~~Dr~~/~~Mr~~/Ms G. Pavithra from M. Kumarasamy College of Engineering has presented a paper entitled Talking Chatbot Using Python in the International conference on " **Innovative Engineering and Technology** " held at **PPG institute of technology**, **Coimbatore** on **05.10.2023** & **06.10.2023.**

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This is to certify ~~Dr~~/~~Mr~~/Ms Priyadharshini . V from M. Kumarasamy college of Engineering has presented a paper entitled Talking chatbot using Python in the International conference on " **Innovative Engineering and Technology** " held at **PPG institute of technology**, **Coimbatore** on **05.10.2023** & **06.10.2023.**

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This is to certify ~~Dr~~/~~Mr~~/Ms G. Nandhini from M. Kumarasamy College of Engineering has presented a paper entitled Talking Chatbot Using Python in the International conference on " **Innovative Engineering and Technology** " held at **PPG institute of technology**, **Coimbatore** on **05.10.2023** & **06.10.2023.**

Organising Secretary | Convenor | Principal