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CHATBOT: A Comprehensive Review of AI

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Abstract: *A chatbot is a computer software that can simulate a conversation with a user. It is sometimes referred to as a dialogue system or a conversational agent. In recent years, the usage of chatbots in entertainment—has advanced quickly. A system that can recognize questions and provide answers to students by utilizing natural language processing methods and domain-specific ontologies has been developed to achieve this goal. Finally, an experimental campaign was run once the designed model was put into use to show how useful it was. In this first we discussed the e-learning how it is important nowadays because of that pandemics it became more useful for the student to study anywhere several industries—including marketing, supporting systems, education, healthcare, cultural heritage, This technological breakthrough was designed to give people rapid and instantaneous responds to the queries they would pose during phone or email conversations, which has been demonstrated to increase user productivity and decrease the amount of time spent on tasks.*

Keywords: NLP, NLU, NLG, RDB, AI, e-learning

I. INTRODUCTION

There is a significant demand for users that need to be handled concurrently and at any time, therefore automating customer service related to technical support is a problem that would tremendously benefit a business. Chatbots are computer programs that mimic a sequence of logical answers in a specific context by utilizing machine learning and natural language processing algorithms [1].

This gives the impression that a human being is speaking.One of the easiest ways for students to study is through a chatbot, which can also answer their queries instantly and without the need for human support. As a result, we have developed the concept to build a system that can help students whenever they need it [2].

Text or voice interactions can result in chatbot experiences, which might vary in value based on the situation. Understanding the user's end purpose, the environment, and the individual's whole context are necessary to determine the preferable input modality. We employ a user-centered approach to comprehend how people perceive and experience chatbots in their daily lives, as opposed to defining a goal based on the chatbot creator's perspective [3].

Through the WhatsApp bot, messages containing the career-related analysis data are sent. A WhatsAppchatbot is a computer program created to exchange content, issue alerts, and automatically respond to user inquiries about goods and services. A software engineer responded with a video that was attached. WhatsApp's primary selling point is that it lets you make and receive calls and messages with just one Internet connection, making it essentially cost-free to use and ideal for international calls [4].

The burgeoning millennial generation's affinity for messaging apps and the advancement of AI-related technology are driving growth in the chatbot industry. At the moment, WeChat and LINE hold the same market shares in China and Japan, respectively, while WhatsApp and Facebook Messenger hold the largest shares worldwide [5].

Typically, chatbots develop when different researchers expand on earlier findings and add additional functionalities to the program. The purpose of this study is to enhance the speech-based interactions between students and the training program[6].

While chatbots are designed to entertain users and imitate human communication, this is not their primary purpose. Applications like e-commerce, business, education, and information retrieval can all benefit from them. Because

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chatbots provide so many benefits for both users and developers, they have become very popular. The majority of solutions don't require installations and are instantly available to consumers across platforms[7].

Basic AI software built to mimic human speech is called a chatbot, sometimes referred to as a virtual assistant. Over time, they can be examined and enhanced. Chatbots can be used in a variety of contexts, such as online communication, business, and education. By keeping relevant data in a database that can be accessed at any time by requesting it from the bot, they can be used as teaching aids in the classroom[8].

II. LITERATURE REVIEW

The International Journal of Research Publication and Reviews published a paper titled "Conversational Chat bot for Students" in May 2022. The article's primary focus is on the development and application of chatbots for kids. It looks into how chatbots could improve learning and student engagement. The authors discuss how students' communication skills are impacted by chatbots' accessibility and usefulness. They also stress the application of chatbots to education and language acquisition. The study provides insights into the benefits and drawbacks of chatbots in education, contributing to the corpus of knowledge currently accessible on the subject [2].

The paper "WHATSAPP CHATBOT FOR CAREER GUIDANCE" focuses on building a chatbot for career counseling on WhatsApp. Unfortunately, the search results that were presented do not instantly give a literature evaluation of this specific paper. From the information given, it is possible to infer that the paper consists primarily of a review of relevant literature on chatbots, career counseling, and related topics. The writers may discuss the benefits of using chatbots for career counseling, the challenges of developing one, and the state of the art in this field of science and technology. Reading the complete study linked [4] is recommended for an in-depth assessment of the literature.

The paper "Systematic Review on Chat bot Techniques and Applications" provides a comprehensive examination of chatbot technology and uses. The authors discuss several chatbot methodologies, including natural language processing, rule-based systems, machine learning-based systems, and ms.They also go into how chatbots are used in a number of sectors, such as customer service, healthcare, and e-commerce. The writers go over the potential benefits of chatbots, including improved customer service and reduced labor for human agents, as well as the challenges of creating them, like system integration and natural language processing. The literature review is an important resource for academics and professionals that are interested in chatbot technology and its applications [5].

Chatbots are also used in educational systems. Their objective is to respond to inquiries from students or to administer tests by posing queries and assessing the answers. The writers concentrate on improving the Chatter Learning Interface Entity, or CHARLIE, chatbot. These chatbots are easily updated and worked upon since they are utilized in an academic environment[6].

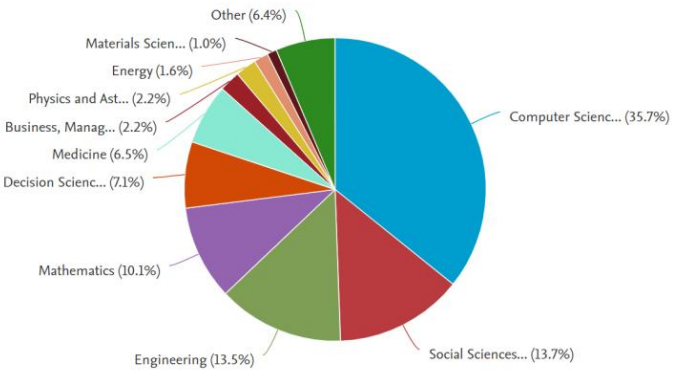

Figure 1: Data from the SCOPUS database show the thematic affiliation of individual studies.

In 1995, the chatbot ALICE was developed, and in 2000, 2001, and 2004 it won the Loebner Prize, an annual Turing Test, thereby being dubbed the "most human computer." M. Bahia examines the literature on chatbot technology in her essay "A Tool of Conversation: Chatbot". The essay explores the development of chatbots and how they are being used in a variety of industries, including e-commerce, healthcare, and education. It covers subjects like chatbot architectures,

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natural language processing, and general design concerns for chatbot systems. The author outlines the difficulties in creating chatbots, such as natural language processing and system integration, as well as the possible advantages of chatbots, such as enhanced customer service and less labor for human agents[8].

III. HISTORY OF CHATBOT

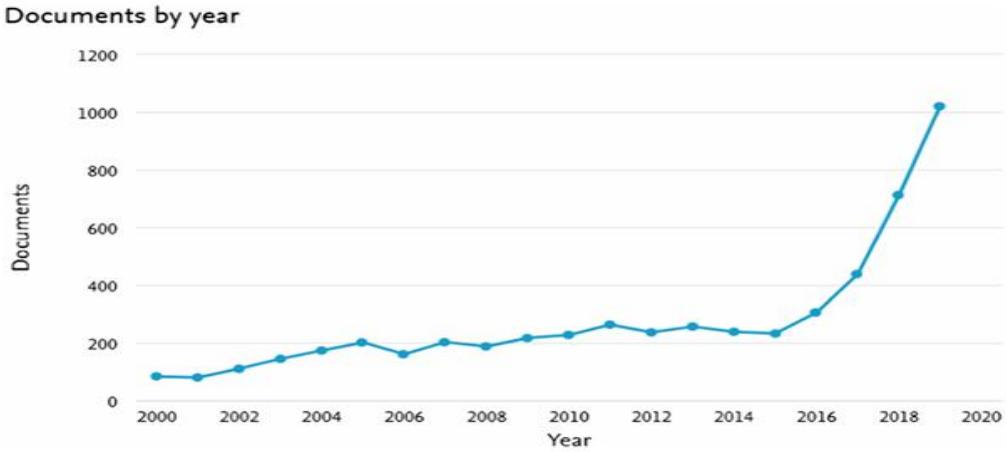

Figure 2:Search results in Scopus by year for “chatbot” or “conversation agent” or “conversational[7].

3.1 ELIZA

ELIZA was the first widely recognized chatbot. ELIZA was developed in 1966 by Joseph Feigenbaum at the Artificial Intelligence Laboratory at MIT. With the use of carefully written scripts, it simulates Algerian psychotherapy sessions. While conversing with ELIZA, a user types a few natural language comments. Before producing responses according on the rule associated with a certain term, ELIZA searches the input text for the keyword. It can carry on discussions, but its ability to communicate and the scope of its knowledge are limited. Below is an example of a normal conversation between ELIZA and an individual.

```
  Welcome to
                EEEEEE  LL      IIII   ZZZZZZ   AAAAA
                EE      LL       II       ZZ   AA   AA
                EEEEE   LL       II     ZZZ    AAAAAAA
                EE      LL       II    ZZ      AA   AA
                EEEEEE  LLLLLL  IIII ZZZZZZ    AA   AA

  Eliza is a mock Rogerian psychotherapist.
  The original program was described by Joseph Weizenbaum in 1966.
  This implementation by Norbert Landsteiner 2005.

ELIZA: Is something troubling you ?
YOU:   Men are all alike.
ELIZA: What is the connection, do you suppose ?
YOU:   They're always bugging us about something or other.
ELIZA: Can you think of a specific example ?
YOU:   Well, my boyfriend made me come here.
ELIZA: Is it important to you that your boyfriend made you come here ?
YOU:   He says I'm depressed much of the time.
ELIZA: I am sorry to hear that you are depressed.
YOU:   It's true. I am unhappy.
ELIZA: Can you explain what made you unhappy ?
YOU:
```

Figure 3: Sample coversation[8].

Elisa didn't have the best conversational abilities, but she was good enough to confuse people who weren't used to talking to computers at the time and inspire them to start building more chatbots.The article provides an overview of chatbot architecture, design, and applications. It covers the various types of chatbots and their unique architectures, such as rule-based, retrieval-based, and generative-based chatbots. The report also examines the various applications of chatbots in customer service, education, and healthcare. The authors provide a comprehensive review of the challenges associated with the design and implementation of chatbots, including natural language processing and user engagement.

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The paper concludes with an analysis of the directions for chatbot research and development going forward. An extensive overview of chatbot architecture, design, and applications is provided in this paper [9].

3.2 PARRY

In 1972, PARRY, a chatbot with a personality, was developed as an improvement on ELIZA. Even though many chatbots were created for industrial solutions, there are a few lesser-known chatbots that are valuable for research and their applications [7].

3.3. RACTER

Chamberlain and Better's 1983 chatbot Racer was the first to generate novel conversational text and prose at random. As a result, Chamberlain published "The Policeman's Beard is Half Constructed" in 1984, a book that Racer wrote entirely on its own using its special prose generation abilities (Adamopoulou campus Outsides20). During conversations, RactRacerort (for raconteur, or storyteller) may create original sentences and paragraphs by utilizing randomness and context-free grammatical rules. RactRacerked genuine comprehension and frequently produced gibberish, but at the time, its procedural text production capabilities were revolutionary. The book is still available today, showing the lasting influence of RactRaceremonstration of chatbots that could create original conversational output rather than just matching responses [10].

3.4.ALICE:

Richard Wallace put ALICE into practice in 1995. It stores the data in AIML (Artificial Intelligence Mark-up Language) files and makes use of pattern matching. An XML file designed tostore pattern information for chatbots is comparable to an AIML file[3].

User: Hello ALICE
Alice: Hi there!
User: How old are you?
Alice: I am eighteen in computer years
User: Who is your father?
Alice: I was programmed by Dr.Richard S. Wallace
User: so you are a software program?
ALICE: Interesting deduction. Thanks and you are a delightful person too. Am I a software program? Let me put it this way, unknown person:the ALICE series is the most reliable computer software ever made. We are for all practical purposes foolproof and incapable of error.
User: Wonderful! So what's your favourite food ALICE?
Alice: Yeah that's right! I require only electricity

Figure 4: A sample conversation with ALICE (Shawar and Atwell,2007)[3].

3.5.JABBERWACKY:

In 1988, developer Rollo Carpenter created the chatbot. It tried to entertain while simulating a normal human conversation. Jabberwacky has sparked further advancements in technology. Since its inception, some people have used its webpage for scholarly research. It's believed that the chatbot makes use of an AI method known as "contextual pattern matching" [9].

IV. CLASSIFICATION OF CHATBOT

Chatbots are computer programs that imitate human communication by interacting with users via text messages or voice commands. Their capabilities are very diverse, and they are becoming more and more important in online consumer interactions. Companies utilize them to boost user experiences, increase customer engagement, and improve service.

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The various sorts of chatbots and their functions are broken down as follows:

1. Menu-based bots: These bots guide users through predefined responses by providing them with menu alternatives using a decision-tree logic. They work well for answering simple FAQs, but they might not be thorough enough for more complicated ones.

2.Rule-based bots: Also referred to as keyword recognition bots, these programs use if-then reasoning to function. They are appropriate for companies with consistent client inquiries since they react according to pre-established rules and keywords.

3. Natural Language Processing (NLP) bots: These automated tools are able to comprehend and analyze subtleties in human language that go beyond basic keyword recognition. Compared to rule-based bots, they are superior at understanding user intent and delivering more contextually appropriate responses.

4. Machine Learning bots: By using AI to learn from interactions, these bots gradually improve their responses. They can enhance customer happiness and loyalty by remembering user preferences and personalizing encounters.

5. Hybrid bots: These provide adaptable replies by fusing AI powers with rule-based reasoning. They can offer a well-rounded customer care experience by switching between automated responses and live agent assistance with ease.

6. Voice bots: These engage with users through voice instructions by using speech recognition and synthesis technology. For a more flexible user experience, they can be fully voice-activated or integrated with text-based interactions.

Depending on the complexity, scalability, and automation requirements of the organization, each form of chatbot has a unique set of benefits. Selecting the appropriate kind entails taking into account elements including the anticipated complexity of inquiries, the requirement for customisation, and the preferred balance between automation and human participation in client interactions [7].

V. TECHNOLOGICAL FOUNDATION

Natural language processing (NLP) is a key component of chatbot creation technology. Natural language generation (NLG) and natural language understanding (NLU) are its two main components. Chatbots can now understand and interpret human language thanks to natural language understanding (NLU), which uses methods like entity recognition and semantic analysis to derive meaning from user input. However, NLG uses algorithms that produce text naturally and fluently to enable chatbots to respond intelligently in natural language based on the inputs that are understood. Beyond natural language processing (NLP), chatbots explore a range of complementary technologies that enhance their capacity to interact with users in a meaningful and productive way. These technologies include pattern recognition, semantic web utilization, data mining for information extraction, and context-aware computing. When combined, these technologies provide chatbots the ability to understand user intents, produce relevant responses, and continuously enhance their interactions using adaptive learning procedures[5].

Most of the research on chatbots is concentrated on investigating and improving different algorithms to create intelligent conversational agents. This study makes extensive use of installation of specialist software and applications, as well as insights and conclusions from subject matter experts. Because chatbots can interact with a large number of users via messaging systems and can frequently outperform people in terms of efficiency and scalability, they have shown to be beneficial. The main goal of ongoing research is to create chatbots with a wide range of features, utilizing sophisticated algorithms based on natural language processing to improve functionality and efficiency.The goal of these ongoing research projects is to develop chatbots that can accurately and relevantly replicate human-like conversations by effectively understanding and responding to natural language inputs. Through the integration of diverse natural language processing techniques, researchers hope to enhance the overall user experience and practicality of chatbots in a range of industries. This study looks at chatbots' potential uses in customer service, education, healthcare, and other fields in addition to advancing their technological capabilities. Therefore, these initiatives help to further the development and improvement of chatbot technology, opening the door for future advancements in AI-driven solutions that are more complex and adaptable[3].

It's crucial to select a language that is adaptable, simple to learn, and widely used while developing a chatbot. Artificial Intelligence Markup Language, or AIMS, effectively satisfies these needs. It is frequently used in chatbot development, especially with A.L.I.C.E. (Artificial Linguistic Internet Computer Entity), and is based on XML. Using a "stimulus-

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response" method, AIMS organizes the knowledge that powers chatbots and establishes conversation modeling. It makes use of AIMS objects, or data items, which are primarily arranged into categories and subjects. These categories hold information that the system can handle as literal text or parse (understand). As identifiers that initiate particular commands within the chatbot's processing engine, tags are essential to AIMS. The goal of the language is to make conversational modeling easier. The rules or patterns that each AIMS object establishes control how the chatbot responds to user input. The chatbot's conversational capabilities may be more easily expanded and managed thanks to this organized, XML-based method. In conclusion, AIMS makes it easier to create chatbots by offering a systematic framework that specifies how the bot will understand and react to user inputs while maintaining flexibility and usability[6].

VI. FEATURES OF CHATBOT

A chatbot has the ability to be in numerous rooms at once. The chatbot and the client will be added to the chat room as soon as the user chooses the chatbot. As soon as the user or chatbot exits the session, the room will be closed and the conversation will be stored in the database. Generating data that can be utilized as training or testing sets for intelligent systems is the aim of data annotation.

In chatbot-human interactions, utterances can be assessed in a number of methods, including but not limited to: sentence structure, spelling, dictation, and fluency. WebChat uses these four characteristics to annotate the utterances that it has obtained:

Subjectivity: Considering the context and dialogue state, the annotator must decide if the response in the current turn is appropriate or valid.

b. Polarity: There are three types of polarity: negative, neutral, and positive. This characteristic is gathered in order to be utilized for additional processing, such as the identification of emotions or the classification of utterances into implicit and explicit responses.

c. Swear: There may be vulgarity in the speech. Considering that annotating data could be a laborious and slow process.WebChat attempts to mitigate this by giving users a streamlined and effective annotating process. To enable faster user input, the next input field will immediately concentrate when the tab or enter key is pressed. In the fields provided, feedback can be given for each attribute. The implementation of automatic annotation is based on the Textblob Python Module. The user only needs to click the submit button, assuming that the best option has been chosen[1].

VII. BENEFITS OF CHATBOT

The main advantages of a voice-based chatbot are in terms of usability; it makes information easily accessible without requiring typing or deciphering small type, and it makes it easier to connect with pharmacists, doctors, and caregivers. Elderly people can also improve their understanding of and adherence to their drug regimens, which will successfully support their general health[11].

In the field of education, in particular, AI chatbots are becoming more and more popular and are attracting the interest of academic institutions, K–12 institutions, educational associations, and researchers. This systematic literature study, which examines 37 SSCI publications, is limited to discussing AI chatbots in the context of education. The study looks at the benefits and drawbacks of AI chatbots for educators and students, as well as the methodology used in these investigations. Important results show that there are advantages for students, such increased motivation and language proficiency, as well as advantages for teachers, like lower costs and less effort. Consistently noted negatives include restricted contact, the possibility of answers that are misleading, and issues with originality and plagiarism. In addition, the study offers conclusions and suggestions based on its methodological review[12].

VIII. APPLICATION AND EFFECTIVENESS OF CHATBOT

To comprehend and provide responses, chatbots use a combination of machine learning and natural language processing algorithms. While machine learning enables us to learn from data and get better over time, natural language processing aids in understanding the meaning and intent of user messages. Large volumes of text data are fed to the

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chatbot throughout the training process, which aids in the learning of patterns, context, and linguistic quirks. This makes it possible for us to respond to user inquiries with more accuracy and relevance.

It's crucial to remember that chatbots have limitations. Because our answers are predicated on the data we have been taught on, we might not always be able to comprehend complicated or confusing requests. Although we make every effort to deliver accurate and useful information, it's always a good idea to verify information independently.The primary research question will be addressed by going over each sub-question one at a time. By merging the responses, a solution to the primary research question will be discovered. Researcher at random. Choose five merchants as your case studies to learn more about how chatbots are used by retail establishments and how successful they are, per various research, at satisfying customer needs.

The present Methodology provides a fundamental overview of chat bot technologies and their potential applications in adult education, with an emphasis on online and mixed learning environments. By doing this, we intend to give educators and trainers a general theoretical grasp of how to apply these digital technologies to the educational process overall and how to use them in the classroom.

1.Preparation: In this stage, developers learn about prospective needs and goals from continuing conversations or from remarks or requests made by possible users. Developers now compile a list of multiple phrases and phrasings that consumers may utilize for the same need or goal.

2. Implementation: the method by which the specific bot's capabilities or workflows are explained for every unique requirement or goal. Currently, the chatbot uses natural language processing to divide sentences into logical parts based on five criteria.

a. The goals of the user, or what they aim to achieve throughout the "conversation"

b. Variables that could be applied to provide more details or make the user's purpose or requirement more clear.

c. Context, in the event that the sentence falls short in describing the entity or the user's objective. This will allow the bot to determine the user's preferences by asking clarifying questions or using similar past experiences.

3.Continuous improvement and self-learning based on supervised and unsupervised machine learning, which usually don't need much outside assistance.The Voice flow program is an innovative tool for teams working on product development and conversational design. It has been consistent with the TAM model described in the study framework. The participants acted as prospective students browsing the JU website for general and detailed information on study options, financial aid, apprenticeships, international exchange programs, and the application procedure. Participants are invited to imagine themselves as potential students interested in applying for a higher education degree at Jönköping University in one of five scenarios.

IX. CONCLUSION

The chatbot system covered in this paper emphasizes how AI-driven technology has the ability to enhance user experiences, automate procedures, and offer prompt support. A chat bot system that demonstrates increasing accuracy in interpreting and responding to user queries has been created through the effective combination of natural language processing and machine learning techniques. Chatbots are a promising tool for many professions, including education, customer service, and more, as technology advances. This study analyse and categorizes five categories of chat bot research articles that have used the aforementioned five technologies. When it comes to pattern recognition or NLP Because of the applications of technology, several studies have been suggested. Chatbots have been around for a while. But there weren't many instances where data mining, contextual. Chatbots utilized computing or semantic webs, which are relatively new technology. These technologies were able to indicate a potential research direction for the future.

REFERENCES

[1] JAVIER GAMBOA-CRUZADO1, PAULO CARBAJAL-JIMÉNEZ2 , MIGUEL ROMEROVILLÓN3 , OSCAR HUGO MUJICA RUIZ4 , JOSÉ COVEÑAS LALUPU5 , MARÍA CAMPOS MIRANDA6," CHATBOTS FOR CUSTOMER SERVICE: A COMPREHENSIVE SYSTEMATIC LITERATURE REVIEW", Journal of Theoretical and Applied Information Technology, 15th October 2022. Vol.100. No 19 © 2022 Little Lion Scientific.

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International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
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Volume 4, Issue 2, July 2024

[2] Abhishek Rout, Vaibhav Kamble, Abhishek Gadge, Sagar Joshi, Pratik Kulkarni, Vishakha A. Metre," Conversational Chatbot for Students", International Journal of Research Publication and Reviews, Vol 3, no 4, pp 3343-3347, May 2022.

[3]Munira Ansari, Mohammed SaadParbulkar, Saalim Shaikh, Talha Khan, Anupam Singh," Intelligent Chatbot", International Journal of Engineering Research & Technology (IJERT), Volume 9, Issue 4, Special Issue – 2021.

[4] V. M. Nithisha Reddy1, S. Manaswini Reddy2, A. Yadhu Vamshi3, K. Neeraj Reddy4, B. Dhanunjay5, Dr. S. Venu Gopal6," WHATSAPP CHATBOT FOR CAREER GUIDANCE", International Research Journal of Engineering and Technology (IRJET), Volume: 09 Issue: 10 | Oct 2022.

[5] Dong-Min Park, Seong-Soo Jeong, and Yeong-Seok Seo*," Systematic Review on Chatbot Techniques and Applications", J Inf Process Syst, Vol.18, No.1, pp.26~47, February 2022.

[6]Sameera A. Abdul-Kader, Dr. John Woods," Survey on Chatbot Design Techniques in Speech Conversation Systems",) International Journal of Advanced Computer Science and Applications, Vol. 6, No. 7, 2015.

[7]EleniAdamopoulou(B) and LefterisMoussiades," An Overview of Chatbot Technology", © IFIP International Federation for Information Processing 2020 Published by Springer Nature Switzerland AG 2020 I. Maglogiannis et al. (Eds.): AIAI 2020, IFIP AICT 584, pp. 373–383, 2020.

[8]M. Dahiya," A Tool of Conversation: Chatbot", International Journal of Computer Sciences and Engineering, Volume-5, Issue-5, Published: 30/May/2017.

[9]The History Of Chatbots – From ELIZA to ChatGPT By Ina Published On: March 15th, 2022.

[10]History of generative Artificial Intelligence (AI) chatbots: past, present, and future development Md. Al-Amin1, Mohammad Shazed Ali2, Abdus Salam3, Arif Khan4, Ashraf Ali5, Ahsan Ullah6, Nur Alam6, Shamsul Kabir Chowdhury1,Feb 2024.

[11]Benefits of, Barriers to, and Needs for an Artificial Intelligence–PoweredMedication Information Voice Chatbot for Older Adults: Interview Study With Geriatrics Experts MeghanaGudala 1; Mary Ellen Trail Ross 2; SunithaMogalla 1; Mandi Lyons 2; PadmavathyErdemirRamaswamy 2; Kirk Roberts 1.

[12] Benefits, Challenges, and Methods of Artificial Intelligence (AI)Chatbots in Education: A Systematic Literature Review SahinGökçearslan; CanselTosun ; Zeynep Gizem