**Introduction**

Simply a chatbot refers to a computer software that mimics human interaction to answer client questions. With the creation of ELIZA, a computer software created to mimic a psychotherapist, chatbots have been around since the 1960s. ELIZA created the appearance of a conversation by using pattern matching and script processing techniques to produce replies to user input. Chatbots advanced in the 1980s with the development of rule-based systems, which employed pre-programmed algorithms to select answers. These chatbots were put to work in several settings, including customer service and information retrieval. With the introduction of machine learning and natural language processing in the 2000s, increasingly complex chatbots that could learn from prior talks and adapt to new scenarios emerged.

In conclusion, chatbots have become a significant technology owing to their capacity to deliver efficient and customized customer support, boost corporate efficiency, lower costs, collect useful data, and improve user experience. Chatbots can deliver rapid and appropriate replies because they can learn from prior discussions and adapt to new situations, making them an increasingly important tool in a range of sectors and applications. Chatbots are set to play an ever more crucial part in the future of digital interactions as the need for 24/7 customer support and seamless user experience grows.

There are generally two types of chatbots:

* Rule-based chatbots: It employs a collection of predetermined rules and replies to respond to user questions based on discovered keywords or patterns.
* AI-powered chatbots: It makes use of machine learning and natural language processing to understand user queries and give dynamic responses that appear more human-like.

ChatGPT is an AI-powered chatbot created by Open AI that can respond to user inquiries in natural language in a human-like manner. It is built on the GPT-3 architecture, a cutting-edge language model capable of producing text that is nearly indistinguishable from human-written text.

ChatGPT is part of a larger trend of developing increasingly complex AI-powered chatbots capable of more customized and nuanced interactions with consumers. ChatGPT, unlike typical rule-based chatbots, use machine learning and natural language processing (NLP) approaches to create more dynamic and contextually aware replies. This implies that ChatGPT may create a broad number of replies based on the context and user input, rather than being constrained to a predetermined set of responses.

The quantity of data on which ChatGPT has been trained is one of the fundamental contrasts between it and standard rule-based chatbots. ChatGPT was trained on a vast dataset of text, which included news articles, social media postings, and other types of text, allowing it to deliver more accurate and natural replies to user inquiries. Rule-based chatbots, on the other hand, are often designed with a set of established rules and replies that are restricted in scope.

Another significant distinction is the amount of customization that ChatGPT can deliver. ChatGPT can deliver more customized interactions with users since it understands real language and generates contextually relevant replies. In contrast, rule-based chatbots are often incapable of providing tailored assistance.

In the end, ChatGPT marks a big step forward in the creation of AI-powered chatbots. It can deliver more accurate and natural responses to user queries while offering more tailored interactions with users via using machine learning and techniques for natural language processing. Traditional rule-based chatbots, on the other hand, are often restricted in their capabilities and unable to give the same level of individualized interactions.

Diagram

Description automatically generated

Fig1 : How ChatGPTworks Source: (<https://substackcdn.com/image/fetch/w_1200,h_600,c_fill,f_jpg,q_auto:good,fl_progressive:steep,g_auto/https%3A%2F%2Fsubstack-post-media.s3.amazonaws.com%2Fpublic%2Fimages%2F2e6c2f94-a539-4851-be8c-5b525c1e227c_2568x3462.png>)

Open AI’s ChatGPT is a big language model based on the GPT-3 architecture. It understands and generates human-like language by combining deep learning approaches such as transformer models and neural networks. The model has been pre-trained on a vast corpus of text data from a range of genres and styles. The model learns to detect patterns in text data and provide coherent replies depending on the input it gets during the pre-training process. When a user interacts with ChatGPT, the model analyzes the user's input and generates a response using natural language processing (NLP) techniques. The answer is created based on the conversation's context as well as the patterns and structures learnt by the model during pre-training. ChatGPT can be customized for certain tasks or domains, such as customer service or instructional help. Fine-tuning the model entails training it on a smaller collection of data related to the task or domain in order to increase its performance in that area. According to Open AI, ChatGPT has performed admirably in a variety of natural language processing tasks such as language translation, text completion, and question answering(Brown *et al.*, 2020).

**Literature Review**

Use of chatgpt in education and other fields

ChatGPT proposes a framework for how the tool might be utilized to enhance student contribution quality. ChatGPT may be used to help students and increase their confidence by asking them to carefully create their prompts and analyze their findings, perhaps in the presence of a tutor in the form of formative feedback. Students can develop text from a collection of brief concepts in which they have more confidence, then verify that writing with their institutional instructor as a type of ‘soft support'. Assuming they develop the capacity to evaluate the worth of the text and guarantee that the final product is correct, this has the potential to generate a more helpful outcome, reflecting the students' ideas and approach while allowing them to express themselves as a type of "transition pedagogy"(Crawford, Cowling and Allen, 2023). The extensive language processing skills of ChatGPT can support cross-field cooperation, allowing students from other disciplines to interact and work more efficiently. ChatGPT is capable of addressing a wide range of impairments, including challenges with reading, writing, and communicating. Implementing inclusive education methods, providing assistive technology and accommodations, and educating teachers and staff to help students with disabilities may all lead to high-quality education for persons with disabilities. Because ChatGPT can respond to user inquiries, it may provide students with a tailored learning experience that fits their learning styles and speed. This model is intended to provide answers to the queries posed to it. If a response is not understood, this paradigm allows for repeating the question or regenerating the answer. ChatGPT is also capable of providing materials for instructors' professional development(Islam *et al.*, 2023). AI technology such as chatbots can improve the learning experience and increase student involvement in online courses by providing personalized and interactive assistance to students. Chat GPT can support autodidactic learners' freedom and autonomous study by providing personalized and interactive assistance. Chat GPT may increase learners' autonomy while also improving learning experiences by providing personalized and interactive aid that is suited to each learner's particular requirements and preferences. Chat GPT, for example, may be used to provide personalized recommendations for reading material and other resources, as well as interactive assignments and activities tailored to students' specific needs and learning objectives(Anon, n.d.). ChatGPT may aid in the resolution of programming errors by giving debugging assistance, bug prediction, and bug explanation. It is well-suited for these jobs because to its capacity to examine and interpret code snippets, as well as its knowledge representation and natural language generating capabilities. ChatGPT should be viewed as one component of a full debugging toolset, and should be used in concert with other tools and approaches to achieve the best potential results. By combining the benefits of ChatGPT and other debugging tools, developers may acquire a more thorough knowledge of their code and more easily discover and repair errors(Surameery and Shakor, 2023). Although ChatGPT has prompted worries about plagiarism and cheating, it may still be used in a variety of ways to improve educational quality. Medical education is evolving in tandem with technological breakthroughs, and AI, such as Chat GPT, may play a variety of useful functions. However, it is critical that we recognize that, while ChatGPT can be useful in many areas of education, it is not a replacement for human instructors and educators and should not be seen as such. ChatGPT can be utilized to help with medical education, research, and clinical management. It cannot, however, be regarded a replacement for human aptitude and knowledge because it is still hampered by the limits that AI encounters(Adamopoulou and Moussiades, 2020). One way ChatGPT may be utilized in a military situation is to generate training materials. The model might be trained on a vast corpus of military-specific literature, such as field manuals and training guides, and then used to create new training materials or summarize current ones. ChatGPT could also be used for military language translation, such as translating communications between different languages to improve communication and understanding between different military units or between the military and local populations in operational areas. ChatGPT may be trained to do terrain analysis for the military by extracting pertinent information from text input using natural language processing techniques. ChatGPT can help with automatic target recognition by extracting essential information from text input and generating insights using natural language processing (NLP) techniques. ChatGPT can contribute to military robotics by extracting useful information from text input and generating insights using natural language processing (NLP) techniques. ChatGPT may be utilized in simulation testing of material development systems by extracting important information from text input and generating insights using natural language processing (NLP) techniques. ChatGPT has the ability to significantly improve and enhance a wide range of military operations and capabilities. Its advanced language processing capabilities can be used to create new techniques and algorithms for tasks like automated target recognition, military robotics, material development system testing, military medicine, battle space autonomy, intelligence analysis, record tracking, military logistics, information warfare, driverless vehicles, surveillance, lethal autonomous weapons systems, battlefield environmental support, virtual and augmented reality modeling, and so on(Biswas, 2023).

Impacts of chatgpt

College students may be able to utilize ChatGPT to cheat on essay writing assignments by providing particular prompts and questions to the chatbot and then copying and pasting the produced replies into their own papers. This would allow them to simply create essays without the time and effort necessary to compose unique material. However, this technique is very unethical and, if discovered, might result in major consequences such as failing grades and academic fines. It is critical for students to appreciate the value of academic integrity and to refrain from utilizing ChatGPT or any other technology to cheat on assignments(King and chatGPT, 2023). Given the difficulties connected with marking student assignments generated by chat API, academic staff might employ a variety of techniques to address these difficulties. For starters, academic staff can provide students clear and precise guidance on how to format their tasks. This can aid in the writing of tasks in a more ordered and comprehensible manner. Second, faculty and staff can utilize a rubric to assess the quality of student work. This can aid in appropriately assessing the student's effort and comprehension of the content. Finally, academic personnel can assess the student's grasp of the subject using a combination of automated and manual evaluation procedures. This can aid in determining the student's genuine level of comprehension(Cotton *et al.*, 2023). Natural language processing (NLP) may be used by ChatGPT to scan academic articles and provide acceptable citations for recognized source materials. This technology has the potential to dramatically speed the citation process and eliminate mistakes by assisting researchers in identifying the sources they should cite and recommending suitable citation style. ChatGPT may also assist researchers in discovering new sources of knowledge and staying current with current breakthroughs in their domains. It is worth mentioning, however, that ChatGPT has been shown to generate academic writings with missing references. While future versions of ChatGPT may be able to give intext references, it is crucial to evaluate the potential ramifications of depending only on an automated tool like ChatGPT rather than studying the literature. The absence of references in early versions of ChatGPT may cause havoc in scientific publication, since the integrity and legitimacy of the study may be called into doubt in the absence of adequate citations(Lund *et al.*, 2023).

ChatGPT has shown great accuracy in natural language processing tasks including language translation and question answering(Radford *et al.*, 2019). The capacity of ChatGPT to create natural-sounding replies makes it ideal for conversational applications such as chatbots and virtual assistants(Zhu *et al.*, 2020). ChatGPT is designed to learn from massive volumes of data, making it a very effective learning tool. When compared to standard data analysis approaches, this can save time and money(Brown *et al.*, 2020).ChatGPT may be used for a variety of purposes, including language translation, content production, and chatbots and virtual assistants(Radford *et al.*, 2019). The lack of interpretability in ChatGPT's decision-making procedures is one of its primary difficulties. As a result, consumers may find it challenging to grasp why the model makes certain decisions or provides specific replies. Users may find it difficult to trust the model if it is opaque(Tjoa and Guan, 2019).To create answers, ChatGPT requires access to enormous volumes of data. This might be difficult for businesses who do not have access to enough data(Strubell *et al.*, 2019).

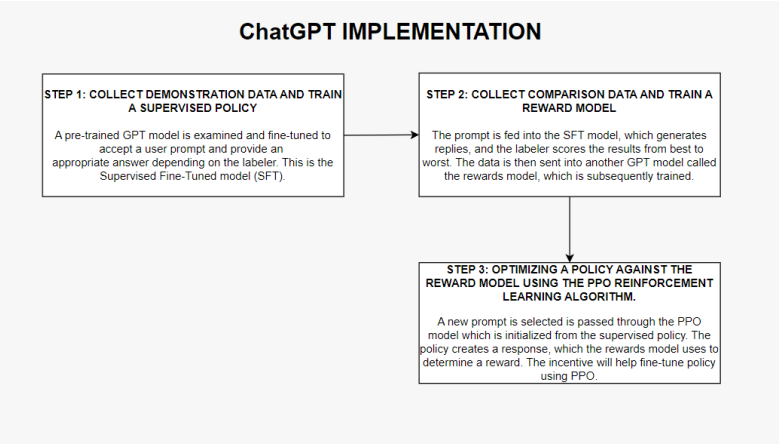


Fig2: Diagram of the GPT Implementation Process(Lund *et al.*, 2023)

GPT stands out as a huge language model owing to its remarkable size and the massive quantity of data needed to train it. The algorithm powering GPT has access to the whole Internet, which means it is constructed on billions of data sources, making it one of the world's biggest language models. GPT is a flexible tool meant to do a variety of language-based activities such as text production, question answering, and translation. It use deep learning techniques and powerful algorithms to grasp the context of a piece of text and create human-like replies, making it unique among language processing tools(Lund *et al.*, 2023).

Ethical issues

Some have expressed ethical issues concerning the use of AI in education, such as the possibility for bias. AI has the potential to perpetuate prejudices and strengthen existing inequities. As a result of these issues, there is a need for ethical standards and best practices for the use of AI in education(Zhai, n.d.).Although the employment of AI technology is strongly advised, its limitations must be acknowledged. Judging a chatbot just on its efficacy, usefulness, and capacity to satisfy and engage people is insufficient. For starters, it raises ethical issues about possible misuse and fraud. Users may incorrectly assume they are interacting with actual people rather than Chatbots (Adiguzel *et al.*, 2023). To guarantee that ChatGPT is used in a safe, fair, and polite manner to students, instructors, and all other stakeholders, responsible and ethical procedures must be followed while adopting the technology in educational settings. The use of artificial intelligence (AI) technology in educational contexts, such as ChatGPT, can provide several benefits; nevertheless, it also presents issues of ethics and accountability(Mhlanga, 2023). ChatGPT provides users with access to knowledge on ethical and socially responsible activities. Individuals will have a better understanding of the relevance of these practices and how they might use them in their personal and professional life as a result of this. ChatGPT is capable of providing several forms of research and study help. This may alleviate students' ethical worries. Again, students may use ChatGPT incorrectly to finish their projects, online quizzes, and so on, lying that they did it on their own. These may have an impact on their ethics as well as their personality(Islam *et al.*, 2023). As artificial intelligence and chatbots grow more common, it is critical to assess the possible consequences for established procedures and to ensure that the value put on human knowledge is adequately balanced with the usage of new technologies(Lund *et al.*, 2023). Bias in a language model refers to systemic mistakes or preconceptions in produced language output that are impacted by training data and reflect societal and cultural prejudices in that data. These biases can have a wide range of effects on language models, including the perpetuation of stereotypes, the creation of misconceptions, and the dissemination of damaging and inaccurate information. Tay, Microsoft's chatbot, quickly embraced the poisonous habits of the worst internet trolls, spreading racist, sexist, and other types of abuse in 2016. Meta's Galactica chatbot had a similar experience. Furthermore, the Twitter trending ChatGPT has been claimed to develop Python programs that evaluate a person's competence in an obviously biased manner based on their ethnicity, gender, and physical features. ChatGPT has safeguards in place to prevent offensive language, however they might not always be efficient(Borji, 2023).

**Trust issues**

The capacity of ChatGPT to create persuasive and logical language makes it vulnerable to manipulation. The approach may be used by bad actors to produce fraudulent material, impersonate persons, or propagate disinformation(Zannettou *et al.*, 2018). It can be difficult to determine who is responsible for ChatGPT-generated content in the absence of defined standards or regulations. This may make it more difficult for people to trust the model or the organizations that utilize it(Jobin *et al.*, 2019).

**Accountability issues**

ChatGPT, being an AI language model, lacks moral agency and intentionality, which means it cannot be held accountable for its acts in the same way that humans are. However, there are still difficulties of accountability when using AI models like ChatGPT. ChatGPT lacks moral agency and intentionality, which means it cannot be held accountable for its acts in the same way as people are. This begs the question of who should be held accountable for the results of AI-generated material, especially when they do harm(Jobin *et al.*, 2019).

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