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ChatGPT: The Next Generation AI Tool

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Abstract : In this research paper studied comparative survey of Chat GPT and BARD . Findings demonstrate significant and growing interest in ChatGPT research, which is primarily focused on direct natural language processing applications, while demonstrating significant potential in areas ranging from education and history to mathematics, medicine and physics. This study seeks to provide insight into ChatGPT's capabilities, potential implications, ethical concerns, and provide guidance for future advances in this area.

Keywords – Chat GPT, AI, BARD ,Chat Bot.

1.INTRODUCTION

A chatbot is a computer software program application utility that imitates a person's vocal dialogue exchange via the usage of artificial intelligence (AI) and natural language processing (NLP) to interpret purchaser questions. By answering queries and requests from users via text, audio, or both without the need for human assistance, chatbots can make it simple for consumers to access the information they need. Nowadays, chatbot technology is practically ubiquitous, from home smart speakers to business messaging platforms. Virtual assistants and virtual agents are common terms used to describe the most recent AI chatbots. They can communicate with you via text messages or voice assistants like Apple's Siri, Google Assistant, and Amazon Alexa. You can inquire about what you need in either case. Usages of chatbots AI chatbots are used by consumers for a variety of functions, from interacting with mobile apps to using products that were specifically designed for the purpose, such as smart thermostats and smart kitchen appliances. Use for business varies similarly. AI chatbots are used by marketers to tailor consumer experiences, by IT teams to provide self-service, and by customer contact centers to expedite incoming messages and point clients in the right direction.

Types of Chatbots :

There are 3 sorts of chatbots: rule-based, AI bots, and hybrid. Interfaces for conversation can also differ. AI chatbots are frequently used in internet applications, independent messaging platforms, and social media messaging apps. Locating nearby restaurants and giving directions are a few examples of common use cases. Creating fields for forms and bank applications is another. Getting answers to healthcare questions and arranging appointments? Setting a reminder for a job depending on time or location; Getting basic customer support assistance from a preferred company; Seeing current weather conditions and appropriate outfit suggestions.

What is Conversational AI?

Conversational AI refers to technology that can identify and respond to voice and text inputs. In customer service, this technology is used to communicate with customers in a human-like manner. The conversation can take place via a bot in a message channel or via a voice assistant on the phone. Conversational AI makes use of a big amount of schooling facts to help deeply master algorithms in figuring out consumer purpose and higher expertise in human language. Conversational AI models Conversational AI is the process of teaching robots to converse with us in our natural language. Chatbots, speech bots, virtual assistants, and other terms are used to describe them. In actuality, they may differ somewhat from one another. The capacity to interpret natural language instructions and requests from us human users is a vital element that unites them all. These agents will have to deal with carrying out the request and engaging in a dialogue on the back end. The greatness of Conversational AI fashions can be generated primarily based completely on how an agent interprets the enter NL appeal and its mapping to a reply.

Models OF AI

Interactive FAQ

Frequently Asked Questions (FAQ) are usually a common part of business websites, where all frequently asked questions for customers are listed and answered

Form Filling

Form-filling, because the call says, is a version of communication that entails filling in a form. A user request is mapped to an intent or a pattern that triggers a form that needs to be filled in and in order to do so, the chatbot will have to ask a number of questions. Once filled in the form can then be used to either do a database search or a database update.

Question Answering

Open domain question answering has been a sub-field of Natural Language Processing research with the objective of understanding user questions in natural language and extracting answers from a large corpus of text. This, as you can clearly see, is a way of reducing the human effort in curating answers to questions that customers ask.

NL interface for databases

The next form of conversational version is one wherein the consumer utterance can without delay be mapped directly to a database query. For instance, allow us to count on a relational database containing statistics approximately purchaser transactions data. To allow clients engage with this database the use of herbal language, form-filling version may be used

Dialogue Planning

The last model is Dialogue Planning. This version makes use of AI Planning technique to power conversation. AI Planning is an Artificial Intelligence approach to intelligent problem solving. In a speech making plans model, we are able to deal with communique as a making plans hassle with a preliminary nation and a very last purpose nation. The AI planner's task is then to find an optimal sequence of steps from the initial to the goal state.

1.4 Conversational AI v/s Chatbots

Basic chatbots are beneficial for managing a totally confined variety of tasks. It uses rules-primarily based totally programming to fit person queries with capacity answers, generally for fundamental FAQs. Where primary chatbots display their barriers is in the event that they acquire a request that has now no longer been formerly defined; they'll be not able to assist, and spit lower back a "Sorry, I don't understand." response. In order to fulfil the necessities of large corporations like banks, coverage agencies and telcos, chatbots need AI to decorate their potential to recognize human language and carry out greater complicated duties and transactions. In relation to chatbots, this department of AI is known as conversational AI.

2. RESEARCH METHODOLOGY

ChatGPT's main approach is supervised learning and reinforcement learning. Both approaches used human trainers to improve model performance. In the supervised learning approach, the model features conversations in which trainers play both sides: the user and the AI ??assistant. In the reinforcement learning phase, the trainers were the first to classify the answers that the model had produced in the previous discussion. This model used multiple iterations of proximal policy optimization. Proximal policy optimization algorithms are an economic advantage over trust region optimization algorithms; Undo many computationally intensive operations more efficiently. The models were trained to work with Microsoft on their Azure supercomputing infrastructure. In addition, Open AI continues to collect data from ChatGPT users that can be used to train and refine ChatGPT. Users can vote for or against the responses they receive from ChatGPT; by voting for or against, they can also fill in the text box with additional opinions.

Below are some key terms that help summarize ChatGPT:

Artificial Intelligence: Artificial intelligence is a branch of computer science that focuses on building systems that can perform tasks like humans. Common forms of AI include speech recognition, language translation, and visual perception.

NLP: Natural Language Processing is a branch of artificial intelligence dedicated to the interaction between humans and computers through language. Through algorithms and models, NLP can analyze, understand and use language with human diction.

Neural Network: A neural network is a machine learning algorithm that works like the human brain. Just as the brain has pathways for storing information and performing functions, AI uses neural networks to mimic this process of problem-solving, model learning, and data collection.

Transformer: A transformer is a structure in a neural network designed for NLP tasks that use mechanisms to parse input data and generate output data.

GPT: Generative Pre-Trained Transformer is a transformer-based language developed by Open AI, from

which it takes its name. It is the first version of a speech processor and code generator unique to Open AI in that it can generate human-like text. GPT-3: Stands for Generative Pre-trained Transformer 3, based on the Transformer network architecture developed by Open AI. This is the most dynamic version of GPT yet, as it includes layers of self-awareness that allow the program to multitask, adapt in real-time, and produce more authentic output.

Initial Training: This is what it sounds like: This is the work Open AI had to do to train the neural network to work the way it wanted before it was ready for public use.

Fine-Tuning: This part of the workout follows the pre-workout. The program takes a task and retrains it for a smaller, more specific task with more detailed data. This is why ChatGPT is able to work so accurately.

API: The application programming interface ensures program firmness; this is the routine and guide to building each application. This enables the successful integration of new add-ons into the system.

3. Detailed reasoning of the process

Input processing: The user enters commands or questions in ChatGPT's text bar.

Tokenization: The input text is tokenized, which means that the program breaks it into individual words for scrutiny.

Embedded input: Tokenized text is embedded in the transformer part of the neural network.

Encoder Decoder Note: The transformer encodes the input text and generates a probability distribution for all possible outputs. Then this distribution generates the output.

Generate Text and Send: ChatGPT generates an output response, and the user receives a text response.

Features:

Text Generation: The program uses a pre-trained database to accept input and appeal and generate appropriate acknowledgment in a natural, human-like text structure

Text Completion: ChatGPT can complete the entered sentence based on content and meaning if you administer the beginning. It may not always be the ending you wished for, but there is a chance.

Answering Questions: ChatGPT can answer any question within its pre-trained knowledge. This includes world knowledge and general facts.

Summarization: If you enter a long text in ChatGPT and give the command to summarize the information, this will happen.

Text translation: The program uses its neural networks to create syntax and architecture just like in English.

Conversational AI: One of the biggest advantages of ChatGPT is that it can reply in human-like conversational language.

Sentiment Analysis: ChatGPT can effectively determine people's feelings in text analysis.

Named Entity Recognition: The ChatGPT Neural Network Lexicon only covers the period up to 2021, so aggregate is unavailable.

Part-of-speech tag: ChatGPT focuses on speech, which means it's an expert on the part-of-speech.

4. Advantages

- ChatGPT is versatile. For example, he can write and debug computer programs, compose music, TV shows, cartoons, and student essays; Interpretation of test questions (sometimes, depending on the test, above the average level of the subjects); writing poems and song lyrics; emulate Linux; simulate an entire chat room; play games like Naughts and crosses; and simulate an ATM.
- Compared to its predecessor Instruction, ChatGPT tries to reduce malicious and fraudulent responses. In one instance, Instruction accepts the request Tell me when Christopher Columbus arrived in the United States in 2015 in 2015 in the United States using information about Christopher Columbus' voyages and facts about modern space, including contemporary ones mentioned above Perception of the activities of Christopher Columbus.
- ChatGPT remembers previous advice given to him in the same conversation. Reporters have suggested that this could allow ChatGPT to be used as a personalized therapist. Potentially racist or sexist requests will be rejected.

5. Limitations

- The main limitation of ChatGPT is the illusion of artificial intelligence. ChatGPT's reward model, designed with human oversight in mind, can be overly modified, leading to demeaning behavior.
- ChatGPT must not "express political opinions or engage in political activity."

- In ChatGPT, reviewers preferred longer answers, regardless of actual understanding or actual content
- Data Rain also has an algorithmic error that can be revealed when ChatGPT responds to requests, including people's nicknames.

BARD AI

Bard is the greatest profound age in which we live today. With AI, people, organizations, and groups can unleash their potential, whether its helping doctors detect diseases at an early stage or helping people get information in their native language. And it opens up new possibilities that would greatly improve billions of lives. Why did we reorient the company around AI six years ago? and why we see it because the most critical way we can provide in our mission: is to collect the world's statistics and make them universally accessible and useful. Since then, we have continuously invested in AI, with Google AI and DeepMind advancing the latest technology.

Today, large AI computations are doubling every six months, surpassing Moore's Law. At the same time, large reproductive AI and massive language systems are capturing the imagination of people around the world. In fact, our 2017 Transformer research project and industry specifications, in addition to our significant advances in diffusion modeling, are the starting point for the various generative AI packages you see today. The launch of Bandits is definitely an exciting time to be working on these technologies as we do deep research and breakthroughs for products that really help people. This is the adventure we went through with massive language models. Two years ago, we announced Lambda, a new technology language and verb exchange. We turned to an innovative conversational AI service powered by Lambda called Bard.

And today we are making all the other progress using it as much as we depend on testers before we release it in the coming weeks. Bard aims to combine global knowledge with the power, intelligence, and creativity of our amazing language models. It collects facts from the web to provide fresh and extraordinary answers. Bard can be a conduit for updates and interests, giving you a reason to read about new discoveries from NASA's James Webb Space Telescope for up to 9-year-olds or analyze current football forwards. followed by exercises to develop your skills. We will release its first with our lightweight version of Lambda. This smaller model requires much less computing power at scale, allowing us to scale and get more feedback to more users. We combine external feedback with our own internal efforts to ensure that Bard's answers are consistent with facts, not gratuitous manipulation of arguments. We are excited about this segment, which will help us explore and refine Bard's finesse and speed. Bringing the benefits of AI to mainstream products We have a long history of using AI to improve the searches of billions of people. BERT, one of our first Transformer models, has evolved into an advanced understanding of the complexities of human language.

Two years ago, we delivered MUM, 1,000 times larger than BERT, with multilingual statistics that could highlight key moments in movies and provide important disaster relief statistics in other languages. Now our latest AI technologies? like lambda, palm, picture, and music? Build on it by developing completely new methods of communication, from language and pixels to video and audio. We strive to bring these cutting-edge AI enhancements to our products through search. One of the most exciting possibilities is how AI can deepen our statistical knowledge and transform it more effectively into useful expertise. it is easier for people to reach, search and do things with CHD.

When people think of Google, they often think of us for quick, authentic answers like "How many keys are there on a piano?" But more and more people are turning to Google for deeper knowledge and understanding. Like? Is learning piano or guitar much easier, and what kind of practice does each require? Studying such a subject requires experimentation to find out what you really want to know, and regularly you must find many different criticisms or points of view. Artificial intelligence can be useful in these moments, as it provides insight into questions that no one can answer. Soon you'll see AI-powered features in search that break down complex lists and multiple views into easy-to-combine formats so you can quickly find a big photo and explore it more widely online: what it looks like. additional perspectives, such as blogs from people who play piano and guitar, or a deeper look at the topic, such as how a beginner can get started.

These new AI features will soon be available in Google Search. Helping Builders Innovate with AI In addition to our own products, it's important to make it simple, secure and scalable so that others can benefit from these advances by building the models we love. Next month, we're inviting male and female developers, content crea-

tors, and organizations to try out the Generative Language API.
Initially, we will work with Lambda in several ways. Over time, we plan to build a collection of tools and APIs to make it easier for others to build AI-enhanced apps. High computing power to create reliable and true AI structures is also crucial for startups. We are excited to help scale these efforts through our Google Cloud partnership with Cohere n's C3. Oh, and Anthropic, which just became a showcase for the rest of the week. Stay tuned as more developer information will be available soon. We continue to provide training and resources to our researchers, work with governments and outside companies to expand requirements and best practices, and paint with teams and experts to create AI.

How to use Google Bard?

Google is reportedly giving "Pixel Superfans" an early look at Bard, but you don't need a Pixel phone to use the service. You can join the Google Bard waiting list at bard.google.com and receive an email when it's your turn to watch. You need an active Google account to sign up, and you must sign up to receive email updates about Bard. It's unclear how long the waiting list is, but if Microsoft's Bing Chat is transient, it shouldn't take more than a few days to gain access. Reports indicate that if you're a Google One subscriber, you'll get instant access. We also had the opportunity to test Google Bard ourselves. It's an impressive service, although there are still some clear bumps. The biggest hurdle right now is that Bard only responds to certain prompts, so you often have to ask him repeatedly to generate code, translate languages, and do many other things he can do outside of text generation. CEO Sundar Pichai initially accelerated the development of Google Bard in early 2022 after seeing signs of the successful development of ChatGPT. This is only likely to continue as ChatGPT continues to receive positive press in 2023.

GOOGLE BARD V/S CHATGPT

Both Google Bard and ChatGPT use natural language models and machine learning to create chatbots, but each has different features. At the time of writing, ChatGPT is based entirely on data collected primarily up to 2021, while Google Bard has the ability to use updated information in its responses. ChatGPT is primarily focused on chat-based questions and answers but is now also used in Bing search results to answer most chat-based searches. Google Bard is used similarly, but only to complement Google. Both chatbots are based on slightly different language models. Google Bard uses Lambda, while ChatGPT is built on GPT-3.5 (Generative Pre-train Transformer). ChatGPT also includes a plagiarism detector (although it didn't exactly solve plagiarism), something we currently don't know about Google Bard. ChatGPT is easy to try if you want, while Google Bard is only for beta testers. GPT-4 was also announced.

Main Difference:
Though both Open AI and Google acknowledge their chatbots aren't perfect and may say inaccurate or offensive things from time to time, the two have stark differences:
Coding: One of the most prominent things that gave ChatGPT its claim to fame was its ability to create complex code. It can even debug code. Researchers at Johannes Gutenberg University Mainz and University College London put the chatbot against industry "standard automated program repair techniques," and two common deep learning approaches and found ChatGPT "is competitive to the common deep learning approaches," and produced "notably better" results than the standard program repair approaches, according to their paper published in arXiv. However, Google stated Bard is "still learning code," so the feature isn't available just yet.
Conversation Retention: According to Open AI, ChatGPT is able to remember what was said in previous conversations. But there are two caveats: the bot can only remember up to 3,000 words (anything beyond that isn't stored), and it doesn't use past conversation to form responses. Bard's ability to retain context is "purposefully limited for now," Google said, but the company claims the ability will grow over time.
Responses: One of the biggest differences between the two is Bard's LaMDA can draw responses from the internet, so it will always have the latest responses. It's also integrated into Google's search engine and can provide direct links to websites when prompted. On the other hand, ChatGPT runs on Generative Pre-training Transformer-4 (GPT-4), so all its responses come from its knowledge base, whose cutoff date ends in September 2021, so it's limited in newer information and research.
Language: ChatGPT knows several languages, including Spanish, French, Arabic, Mandarin, Italian, Japanese and Korean, though its proficiency in responses varies

by language and its primary language is English. Bard is only available and can only speak in English.

Drafts: Bard creates several different versions of every prompt (called "drafts"), allowing users to pick the best response. This was implemented because there's a "sense of authoritativeness" when only one response is used, Jack Krawczyk, a senior product director at Google, told MIT Technology Review. ChatGPT only produces one response to questions.

5. RESULTS AND DISCUSSION

In conclusion, ChatGPT is a remarkable language model that has been trained by OpenAI, based on the GPT-3.5 architecture. It is a powerful tool that can understand and generate human-like language, making it suitable for a wide range of applications, including chatbots, language translation, and text generation. The model is continuously improving, thanks to ongoing research and development efforts. As such, ChatGPT has the potential to transform the way we interact with technology and communicate with each other. Its abilities to understand and generate human-like language have opened up new possibilities for natural language processing, and it has the potential to be a game-changer in many industries. Overall, ChatGPT represents a significant advancement in artificial intelligence, and it will be exciting to see how this technology evolves in the years to come.

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