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Exploring the Capabilities and Limitations of ChatGPT and Alternative Big Language Models

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Abstract: ChatGPT, an artificial intelligence (AI)-powered chatbot developed by OpenAI, has gained immense popularity since its public launch in November 2022. With its ability to write essays, emails, poems, and even computer code, it has become a useful tool for professionals in various fields. However, ChatGPT's responses are not always rooted in reality and are instead generated by a Generative Adversarial Network (GAN). This paper aims to build a text classification model for a chatbot using Python. The model is trained on a dataset consisting of customer responses to a survey and their corresponding class labels. Many classifiers are trained and tested, such as naive Bayes, random forest, extra trees, and decision trees. The results show that the extra trees classifier performs the best with an accuracy of 90%. The system demonstrates the importance of text preprocessing and selecting appropriate classifiers for text classification tasks in building an effective chatbot. In this paper, we also explore the capabilities and limitations of ChatGPT and its alternatives in 2023. We present a comprehensive overview of the alternative's performance. The work here concludes with a discussion of the future directions of large language models and their impact on society and technology.

Keywords: natural language processing, applied AI, conversational AI, machine learning, language model, ChatGPT, Google BARD, dialogue generation, intelligent systems

1. Introduction

Human–computer interaction (HCI) is the field of study that examines the ways in which people interact with computers and technology (AlZu'bi et al., 2022; Bhardwaj et al., 2021; Issa, Tomayess, 2015; Issa & Isaias, 2022). It encompasses a wide range of topics, including user interface design, human factors, and the social and psychological aspects of technology use. HCI researchers aim to design user interfaces that are easy and efficient to use, as well as accessible to people with disabilities. This includes understanding how people interact with technology on a social and psychological level and how technology affects our relationships and communication, as well as our cognitive processes and decision-making. The field of HCI is multi-disciplinary, drawing from fields such as cognitive psychology, computer science, and design, and it plays a critical role in shaping the design and development of technology to meet the needs of users.

Artificial intelligence (AI) is a field of computer science that aims to create machines and software that can perform tasks that would typically require human intelligence, such as perception, reasoning, learning, and decision-making (Kanan et al., 2015; Tarek et al., 2019; Russell & Norvig, 2015). AI technologies include machine learning, natural language processing (NLP), computer vision, and robotics. In recent years, AI has made significant strides in a wide range of applications, such as speech recognition, image recognition, and natural language understanding (Kelleher & Tierney, 2018). The ability of AI systems to analyze large amounts of data and make predictions has led to their increased use in various industries, such as finance, healthcare, and transportation. However, AI also raises a number of ethical, legal, and societal concerns, including issues related to privacy, bias, and transparency. There is ongoing research and debate about the potential impacts of AI on employment, inequality, and autonomy (Kanan et al., 2020, 2022).

NLP (Young et al., 2018) is a subfield of AI that is focused on the interaction between computers and human language. It involves the use of computational techniques to process and analyze human languages, such as speech and text. NLP tasks include language translation, speech recognition, text-to-speech synthesis, and natural language understanding. Recent advances

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in NLP (Goldwasser & Roth, 2019) have led to significant improvements in language translation, speech recognition, and text-to-speech synthesis. NLP technologies are widely used in various applications such as chatbots, virtual assistants, and automated customer service. Additionally, NLP has also been used in advanced applications such as sentiment analysis, text summarization, and named entity recognition and many other employments in AI applications (Arsenijevic & Jovic, 2019; Abdelhamid et al., 2022; Duijzer et al., 2018; Jain & Tokekar, 2015; Mughaid et al., 2022a, 2022b; Obeidat et al., 2021; Singh et al., 2017).

Chatbots, also known as conversational agents, are computer programs designed to simulate conversation with human users. They have become increasingly popular in recent years as a way to provide customer service and automate repetitive tasks. Studies have shown that chatbots can improve customer satisfaction and reduce costs for businesses (Kang, 2017; Wang et al., 2018). However, a common issue with chatbots is that they often produce responses that are similar to each other, making it difficult for users to distinguish between different interactions (Li et al., 2019). Researchers have proposed various methods for addressing this problem, including using more diverse training data and incorporating human feedback (Jiang et al., 2015; Shum et al., 2021). Overall, chatbots have the potential to provide significant benefits, but it is important to address issues of similarity in order to improve the user experience.

Since its public launch in November 2022, ChatGPT, the amazing chatbot powered by OpenAI (2022), has grown in popularity like wildfire. Social media is flooded with incredible things people do with this intelligent chatbot. Job seekers, programmers, high school teachers, content creators, and professionals in almost every field find good uses for the tool. This revolutionary AI-powered chatbot promises to be able to write essays, emails, poems, and even computer code, making it a must-have for those looking to take their creativity and productivity to the next level (Abdullah et al., 2022).

OpenAI's announcement came on their official Discord server, making this a major step forward for the company. With ChatGPT Professional, OpenAI is offering users an unprecedented level of freedom and control over their written content. The benefits of ChatGPT Professional include no "blackout" windows or throttling, and an unlimited number of messages with ChatGPT—at least two times the regular daily limit. ChatGPT has been incredibly popular since its launch and now has over a million users, attracting major media attention and spawning countless memes on social media.

ChatGPT is a large language model developed by OpenAI that can generate human-like text based on a given prompt. One of the key features of ChatGPT is its ability to generate highly diverse and contextually relevant responses, thus avoiding the common issue of producing similar responses. This is achieved by training the model on a vast amount of diverse data (Brown et al., 2020) and fine-tuning it on specific tasks such as customer service and Q&A (Radford et al., 2019). However, a limitation of ChatGPT is that it can still generate some irrelevant or nonsensical responses, particularly when given an ambiguous or open-ended prompt. Researchers have proposed various methods to address this issue, such as incorporating human feedback (Li et al., 2019) or using more sophisticated techniques such as reinforcement learning (Zhang et al., 2020). Overall, ChatGPT represents a major advancement in the field of chatbot technology, by providing highly diverse and contextually relevant responses. However, there is still room for improvement in terms of avoiding irrelevant or nonsensical responses.

In recent years, chatbots have become increasingly popular as a tool for customer service and support. Chatbots can provide quick, automated responses to customers' questions and concerns, improving the overall customer experience. Text classification is a critical component of chatbot development, as it allows the chatbot to understand and categorize incoming messages, enabling it to provide appropriate responses. In this paper, we will explore the process of text classification using two datasets: "sheet1.csv" and "sheet2.csv" (Koul, 2021). We will use various machine learning algorithms, including multinomial naive Bayes, decision trees, random forests, and extra trees, to classify the text data into different categories. Our contribution is to compare the performance of these algorithms and identify the most accurate one for text classification in chatbot development.

1.1. Best ChatGPT alternatives of 2023

Since ChatGPT was initiated lately in 2022, many service providers had launched their models to compete in the developing market. The following are recent competitors:

- GPT-3: An alternative to ChatGPT is the GPT-3 Playground (2023), a tool that lets users interact with OpenAI's GPT-3 language model. GPT-3 is an AI model that generates human-like text through machine learning, making it useful for tasks such as language translation, content creation, and chatbot development. The GPT-3 provides a simple interface for interacting with the model, allowing users to enter questions and receive answers based on the input.
- Google Bard: Google Bard (Rahaman et al., 2023) is a chatbot created by Google that utilizes natural language processing and machine learning to simulate human conversations. Its purpose is to supplement Google search and provide users with natural language responses to their inquiries. It can be integrated into messaging platforms, applications, or websites to enhance the user's experience.
- YouChat: Another alternative to ChatGPT is YouChat (2023), which is powered by OpenAI's GPT-3.5 AI model and has capabilities similar to ChatGPT. YouChat is integrated into a private search engine, You.com, and offers both search engine results and chatbot responses to questions. It may not be as accurate as ChatGPT when it comes to recent events, as its knowledge base only goes up to 2021. However, it performed well when compared to ChatGPT in a comparison of the iPhone 13 Pro and iPhone 14 Pro.
- Texti.app: A tool that utilizes AI to help with searching more efficiently is Texti.app (2023). It automatically answers questions as you search, providing a short description of each article or website related to the search. The website is easy to navigate and saves time by eliminating.
- Unnecessary pages.
- Caktus: It is a platform that offers web design, development, and content marketing services. It is a great choice for businesses and individuals looking to create a digital presence, with an intuitive interface, hosting services, and top-notch customer support. Caktus (2023) is regularly updated with new features and enhancements, making it a great option for building a strong online presence.
- Chatsonic: It is an AI-powered chatbot platform from Writesonic (Chatsonic, 2023) that enables organizations to utilize AI's power to personalize client experiences and raise customer engagement.

2. Capabilities and Limitations of ChatGPT

ChatGPT is a cutting-edge language model developed by OpenAI that has a vast amount of knowledge and language processing capabilities. It can generate human-like responses to a wide range of questions and perform various natural language tasks such as text completion, summarization, translation, and question answering. Despite its impressive abilities, ChatGPT also has certain limitations. For example, it has been trained on a large corpus of text data, but it still lacks the ability to fully understand context and often produces responses that lack emotional intelligence. Additionally, it can be susceptible to biases in the data it was trained on, leading to inaccurate or insensitive outputs. It is important to understand these limitations and use ChatGPT appropriately for tasks that it is suited for.

2.1. Capabilities

- Text generation: ChatGPT can generate text based on a prompt, including but not limited to: conversation, summaries, stories, poems, and more.
- Question-answering: ChatGPT can answer a wide range of questions, including but not limited to: factual, definitional, and conversational questions.
- Language translation: ChatGPT can translate text from one language to another.
- Text classification: ChatGPT can classify text into different categories based on the input.

2.2. Limitations

- Contextual understanding: ChatGPT can struggle with understanding context and may generate responses that are not relevant to the prompt.
- Lack of common sense: ChatGPT lacks common sense knowledge and can generate responses that are not logically or socially appropriate.
- Bias: ChatGPT has been trained on large amounts of text from the internet, which may contain biases and inaccuracies.
- Sensitivity to input format: ChatGPT can be sensitive to the format of the input and may generate unexpected results if the input is not formatted correctly.

2.3. Ways to get the most out of ChatGPT

ChatGPT, developed by OpenAI, is a powerful tool for NLP tasks such as answering questions, generating text, and translating language. One of the key benefits of using ChatGPT is its ability to provide accurate and prompt responses to a wide range of inquiries, making it a useful tool for businesses and organizations looking to enhance their customer service capabilities. Another benefit is its versatility, as ChatGPT can be integrated into a variety of applications, such as virtual assistants and language translation software, to improve the user experience. Additionally, ChatGPT has the ability to learn and adapt over time, which means that its performance can be continually optimized to provide the most accurate and helpful responses. And the following helps for getting the most out of ChatGPT.

2.3.1. Be specific with your request and accurate

One of the best ways to get the most out of ChatGPT is to be specific in your application. The more specific your request, the more accurate the results. Instead of asking a general question, try to provide as much context as possible. For example, instead of asking, "What is the weather like today?" ask, "What is the weather like in Cairo today?" Thus, you will get a better result.

2.3.2. Use correct grammar and spelling rules

Another important factor in getting the best out of ChatGPT is the use of correct grammar and spelling. GPT chat is trained on a large dataset of text and is better able to understand requests written in correct grammar and spelling. If your request is written with bad grammar or spelling, it can lead to inaccurate results.

2.3.3. Try to provide relevant information in the request

It is important to provide ChatGPT with information relevant to your application. ChatGPT will attempt to generate responses based on the information provided to it. If the information provided is not appropriate or accurate, the responses generated may not be accurate either. For this, show the bot some of the information you have about the order you want.

2.3.4. Be patient and give ChatGPT some time

ChatGPT is a powerful tool, but it cannot always generate a response instantly. In some cases, ChatGPT may take a little longer to generate a response. For this, be patient and wait for the form to respond. Also, sometimes you may not get your order because it remains an AI robot.

2.3.5. Use the correct version of this robot

Different versions of the ChatGPT AI typing bot are available, each with its own strengths and weaknesses. It is important to use the correct version of the template in order to get accurate results in GPT chat and in a way that shows the capabilities of this smart bot. This will help to get the best out of ChatGPT.

2.3.6. Control the length of the text

ChatGPT can generate text of different lengths depending on the task assigned to it. For example, if you are using ChatGPT to compose a Tweet, you will want to keep the text short. However, if you are using it to create a news article, you will need to generate more text. Make sure to control the length of the generated text to suit your own needs.

2.3.7. Try to use the conversation for one request only

One conversation you start with ChatGPT is for one request and keep it going from start to finish on the same topic. That is why if you asked, for example, once to write an article about the Samsung S21 phone, and then write a topic about the news today in Algeria, you will find that the content that will appear to you is very poor and not suitable for your aspirations that you want. This is why avoid this common mistake that many people are now making.

3. Capabilities and Limitations of Alternatives of ChatGPT

The capabilities and limitations of existing chatbots like Caktus, Chatsonic, and BERT can vary depending on the specific implementation and use case. However, some general capabilities and limitations include:

3.1. Capabilities

3.1.1. Natural language processing

NLP is a key component of chatbots, and it involves understanding the natural language input from the user.

However, NLP is a complex and challenging problem, as natural language is very diverse and has many nuances. It can be difficult to accurately understand the intent behind user inputs, especially when they use slang, colloquialisms, or other non-standard language.

3.1.2. Contextual understanding

Chatbots must be able to understand the context of a conversation and use that context to provide appropriate responses. This can be challenging, as conversations can change direction quickly, and users may switch between topics or use ambiguous language.

3.1.3. Integration with backend systems

Chatbots may need to integrate with backend systems to access data or perform certain actions. This can be difficult, as different systems may use different data formats or APIs.

3.1.4. Maintenance and updates

Chatbots require regular maintenance and updates to ensure they continue to function properly. This can be time-consuming and expensive, especially if the chatbot is complex or has many integrations.

3.1.5. User experience

Chatbots must provide a good user experience, which can be challenging. Users may become frustrated if the chatbot cannot understand their inputs or provides inaccurate or irrelevant responses. It is essential to design chatbots that are user-friendly and provide a seamless experience.

3.2. Limitations

3.2.1. Limited domain knowledge

Chatbots are often only able to provide information and support within a specific domain and may struggle with more complex or niche topics.

3.2.2. Lack of emotional intelligence

Chatbots are not able to pick up on emotional cues or respond with empathy in the same way that a human would, which can be a limitation in certain use cases.

3.2.3. Security and privacy concerns

Chatbots may be vulnerable to security and privacy breaches, particularly when handling sensitive information like personal or financial data.

3.3. Language models for performance summary

After reviewing the available language models chatbots for performance, Tables 1, 2, 3, and 4 summarize the performance and the pros and cons of each of ChatGPT, Google BARD, Chatsonic, and Caktus between language models according to the most significant factors.

4. The Sustainable Future with ChatGPT

4.1. ChatGPT for facilitating human lives

ChatGPT, being a powerful language model, can facilitate human lives in several ways. For instance, it can be used as a virtual assistant to answer frequently asked questions, reduce

Table 1
Summary of ChatGPT performance

Language Models	ChatGPT
Response time	Fast and able to provide a response in a matter of milliseconds
Quality answer	High quality The model is designed to generate human-like text, but it is not capable of understanding or having opinions like a human. Depend on the complexity and specificity of the input provided
Reliability	Able to generate human-like conversations that are natural, engaging, and accurate
Flexibility	It allows users to customize their conversations with the AI in a way that is tailored to their needs
Real time	Knowledge cut-off is in 2021
Easy to use	Free all time
Image generation	Can generate images
Voice commands	Does not use voice commands:but streamlines process and help you write faster

Table 2
Summary of Google BARD performance

Language Models	Google BARD
Response time	Faster
Quality answer	Contextually accurate
Reliability	Comes from its ability to accurately capture the context and meaning of words in a given sentence or passage
Flexibility	Flexible
Real time	Based on up-to-date, current data
Easy to use	Requires expertise
Image generation	Cannot generate images
Voice commands	Cannot process voice commands

Table 3
Summary of Chatsonic performance

Language Models	Chatsonic
Response time	There is a bit of slowness
Quality answer	Excellent
Reliability	Designed to be highly scalable and offers a range of features and integrations that make it an attractive option for businesses
Flexibility	Easy to navigate and provides a wide range of features and options
Real time	Real-time application, integrated with Google Search and is up to date
Easy to use	You can ask the site only 25 questions per day
Image generation	Can generate AI images
Voice commands	The voice commands are used to produce an output

Table 4
Summary of Caktus performance

Language Models	Caktus
Response time	Fast response time
Quality answer	Excellent
Reliability	It is updated regularly with new content and features, and the content is accurate and up-to-date
Flexibility	Users can choose from a variety of chatbot templates, customize the conversation flow, and even add custom responses
Real time	Real-time application, integrated with Google Search and is up to date
Easy to use	It is not free. $9 per month subscription
Image generation	Cannot generate AI images
Voice commands	Does not use voice commands, but streamlines process and help you write faster

wait times in customer support, and automate tedious tasks. It can also provide quick and accurate information in various domains, such as news, weather, and navigation, freeing up valuable time for humans. In addition, ChatGPT can assist with language translation, helping break down language barriers and facilitating communication across cultures. By using NLP and machine learning, ChatGPT has the potential to significantly enhance the daily lives of individuals and communities. The following summarize some fact on how ChatGPT can facilitate human lives:

- Personal assistant: ChatGPT can help you with scheduling, reminders, and tasks, such as setting alarms, creating to-do lists, and sending emails.
- Language translation: If you need to communicate with people who speak different languages, ChatGPT can help you translate your messages.
- Writing assistance: ChatGPT can help you write essays, emails, articles, and other written content, making it a valuable tool for students, writers, and professionals.
- Creativity boost: ChatGPT can help you generate new ideas and inspire creative thinking, making it a valuable tool for brainstorming and problem-solving.
- Entertainment: ChatGPT can engage in interesting and amusing conversations, making it a fun way to pass the time and help you relax.
- Study assistance: ChatGPT can help you with your studies by providing summaries, flash cards, and practice questions, making it a great tool for students.
- Interview preparation: ChatGPT can help you prepare for job interviews by providing sample questions and answers and helping you practice your responses.
- Daily inspiration: ChatGPT can provide you with daily motivation, inspiration, and quotes to help you start your day on a positive note

4.2. Investments using ChatGPT

ChatGPT can provide valuable insights and recommendations for investment decisions through its ability to process vast amounts of data and understand patterns in financial markets. Additionally, it can provide real-time updates and analysis of economic indicators and stock performance, helping investors make informed decisions. However, it is important to note that ChatGPT should not be relied upon solely for investment decisions, as human judgment and market analysis are still critical factors in successful investing.

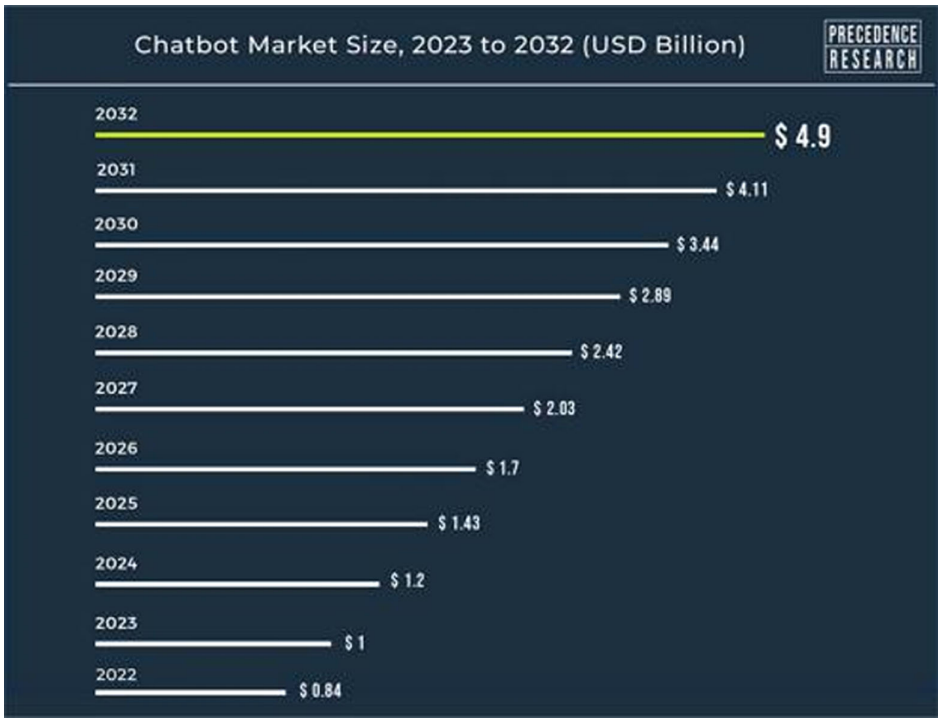
- Content creation: You can use ChatGPT to generate written content, such as articles, blog posts, and product descriptions, and sell them to individuals or businesses.
- Copywriting: You can use ChatGPT to write copy for websites, advertisements, and marketing materials and offer your services to businesses and individuals.
- Chatbot development: You can use ChatGPT to develop custom chatbots for businesses and organizations, providing them with automated customer service and support.
- Language translation services: You can use ChatGPT to provide translation services to businesses and individuals, translating documents, emails, and other written content.
- Virtual assistant services: You can use ChatGPT to provide virtual assistant services to individuals and businesses, such as scheduling, email management, and data entry.
- Tutoring services: You can use ChatGPT to provide online tutoring services in various subjects, helping students with their studies and homework.
- Social media management: You can use ChatGPT to help businesses manage their social media accounts by generating posts, responding to comments, and managing their online reputation.
- Research assistance: You can use ChatGPT to provide research assistance to businesses and individuals, helping them gather information on various topics

4.3. ChatGPT impacts and expectations

Developers can expect ChatGPT to have a significant impact on their work by providing them with a powerful tool for generating text-based content, which can be used in a variety of applications. Some of the potential benefits include:

- Improved productivity: ChatGPT can help developers automate the process of generating written content, such as code comments, documentation, and issue summaries, allowing them to focus on more complex tasks.
- Increased creativity: ChatGPT can help developers generate creative ideas and inspire new approaches to problem-solving, allowing them to come up with new and innovative solutions.
- Better communication: ChatGPT can help developers communicate
more effectively with others by providing them with the ability to generate clear and concise written explanations of their work.
- Enhanced user experience: ChatGPT can be used to improve the user experience in various applications, such as chatbots and virtual assistants, by providing more natural and engaging interactions.
- Greater efficiency: ChatGPT can be used to improve efficiency in various applications, such as content generation, language translation, and virtual assistance, by providing fast and accurate results.
- Automating repetitive tasks: ChatGPT can be used to automate repetitive tasks such as writing code comments, summarizing documentation, or creating test cases.

Figure 1
Expected growth of chatbot market size till 2032 in USD billions (Precedence Research, 2023)



- Improved accessibility: ChatGPT can be used to improve accessibility in various applications, such as chatbot and virtual assistants, by providing support for multiple languages, thus making it easier for people with different linguistic backgrounds to use.

The global chatbot market size is projected to be worth around USD 4.9 billion by 2032 from valued at USD 0.84 billion in 2022 and it is growing at a CAGR of 19.29% from 2023 to 2032, according to new study by Precedence Research (2023). Businesses primarily use chatbot to communicate with clients via text, image, and video. Chatbots are used on apps, websites, and messaging services in social media platforms.

The growth of the chatbot market is driven by various factors including increased demand for seamless customer support, market players adopting advanced chatbots, and growing use of chatbots on e-commerce sites. On the bright side, efforts to create self-learning chatbots that mimic human conversation are poised to open up new growth opportunities. Figure 1 illustrates the expected growth of chatbot market size till 2032 in USD billions.

According to Simplr Inc. (2023), Table 5 illustrates significant statistics about chatbots and large language models. Overall, developers can expect ChatGPT to be a powerful tool that can help them improve their productivity, creativity, and communication and enhance the user experience in various applications

5. Methodology

Text classification is the process of categorizing text into predefined categories or classes based on their content. This technique is widely used in developing ChatBots, which are intelligent virtual assistants capable of interacting with users in natural language. In this paper, we have used text classification techniques to develop a ChatBot capable of handling customer inquiries and providing relevant responses

1) Import the dataset we will be using for our ChatBot. The dataset we are using is a CSV file with three columns: response-id, class, and response-text.
2) Perform some preprocessing on the text data.
   - Convert all the words to lowercase.
   - Remove all the punctuation and special characters.
   - Remove all the stopwords.
   - Use the Lemmatizer() function to convert words to their root form.
3) Split the dataset into training and testing data.
4) Experiment with classification models, such as the MultinomialNB(), RandomForestClassifier(), ExtraTreesClassifier(), and DecisionTreeClassifier(), and compare their accuracy.

6. Experiment

In this experiment, we aimed to classify text using various machine learning algorithms and evaluate their accuracy. The dataset used in this experiment was a publicly available dataset of customer feedback responses.

6.1. Preprocessing

Started the experiment by preprocessing the data. The preprocessing steps included converting all text to lowercase, removing punctuations, removing stop words, and lemmatization. After preprocessing, we created a new column in the dataset with the preprocessed text.

Table 5
Significant statistics about chatbots and large language models

Stat 1	34% of people use a chatbot as a means of getting connected with a human
Stat 2	1.4 billion people are using chatbots, and the top 5 chatbot-using countries are the United States, India, Germany, the United Kingdom, and Brazil
Stat 3	The global chatbot market is projected to grow to over $994 million by 2024
Stat 4	57% of businesses claim that chatbot delivers a big ROI on minimal investment
Stat 5	36% of businesses use chatbots to generate more leads, and business leaders claim that on average, chatbots improve sales by 67%
Stat 6	69% of consumers prefer chatbots for receiving instant responses, and they are most likely to use chatbots for service-related inquiries
Stat 7	According to 64% of internet users, 24-hour service is the best feature of chatbots
Stat 8	96% of businesses believe chatbots are here to stay
(Wadhwa, 2023)	
Stat 9	95% of ecommerce shoppers interacting with chatbots said that their pre-sale experience would have been better with human help
Stat 10	20% of Gen Z consumers prefer to start their customer service experience with a chatbot, compared to only 4% of Boomers
Stat 11	80% of consumers in a recent survey said they are more willing to use a chatbot if they know they can quickly and easily transfer to a live agent
(Simplr, 2022)	
Stat 12	By 2024, Insider Intelligence predicts that global consumer retail spend via chatbots will reach 142 billion—up from 2.8 billion in 2019
Stat 13	The adoption of chatbots could save the healthcare, banking, and retail sectors $11 billion annually by 2023
(Yuen, 2022)	
Stat 14	One-third of customers prefer chatbots for customer service, according to CCW
Stat 15	84% of businesses believe chat and instant messaging bots will become more important in 5 years
(Cantor et al., 2019)	
Stat 16	23% of consumers still prefer to have a face-to-face interaction when the complexity of the issue increases, such as with payment disputes or complaints
(American Express, 2017)	
Stat 17	74% of users prefer chatbots while looking for answers to simple questions
(PSFK, 2021)	
Stat 18	By 2027, chatbots will become the primary customer service channel for roughly a quarter of organizations
(Gartner, 2022)	
Stat 19	47% of consumers are open to using a chatbot to make a purchase, and a study by Juniper estimates that chatbots will account for $112 billion in retail sales by 2023
(Williams, 2019)	
Stat 20	Chatbots can decrease handling time by up to 77%
(Deloitte, 2019)	
Stat 21	39% of businesses use chatbots to make their websites more interactive
(Blagojević, 2023)	
Stat 22	A recent study from GOMoxie found only 22% of consumers have a positive impression of chatbots
(GOMoxie, 2021)	
Stat 23	40% of consumers are indifferent when it comes to engaging with a chatbot or a human for help, as long as they receive the support they need
(HubSpot Research, 2017)	

6.2. Vectorization

Used the CountVectorizer and TfidfVectorizer from the scikit-learn library to convert the preprocessed text into numerical data, which can be used for machine learning algorithms.

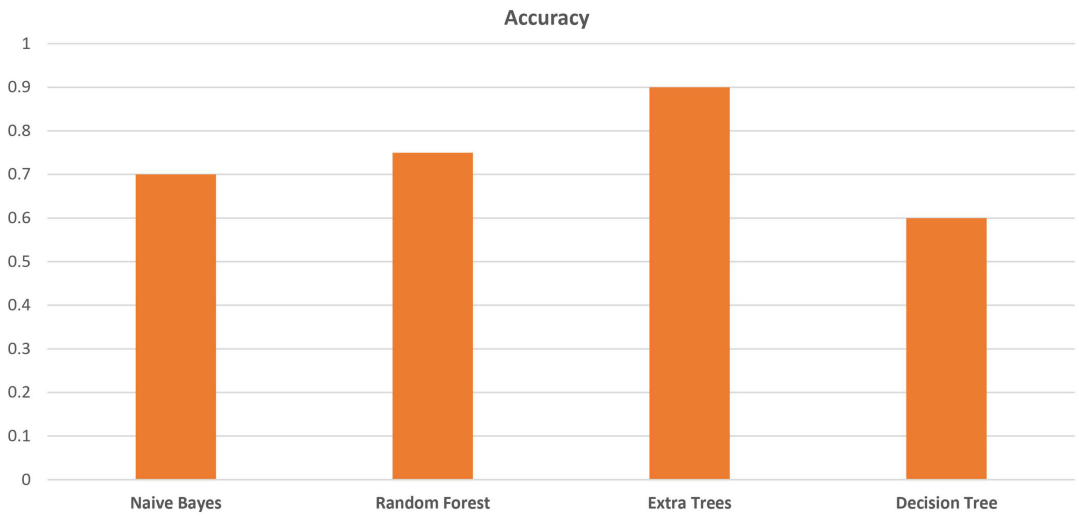
Table 6
Evaluate the performance of the classifiers

Classifiers	Accuracy
Naive Bayes	0.70
Random forest	0.75
Extra trees	0.90
Decision tree	0.60

6.3. Modeling

Trained and evaluated four machine learning algorithms, namely naive Bayes, random forest, extra trees, and decision tree. We used the train-test-split method to split the dataset into training and testing sets with a ratio of 75:25. We trained the models on the training set and evaluated them on the testing set.

Figure 2
Evaluate the performance of the classifiers



6.4. Evaluation

Used the accuracy score as a metric to evaluate the performance of the models. The accuracy score represents the percentage of correct predictions made by the model on the testing set. We calculated the accuracy score for each of the four models and compared their performance.

6.5. Results

The extra trees classifier achieved an accuracy score of 0.90, while the random forest classifier achieved an accuracy score of 0.75. The naive Bayes classifier achieved an accuracy score of 0.70, and the decision tree classifier achieved an accuracy score of 0.60. Based on the accuracy scores, the extra trees classifier performed the best in classifying the customer feedback responses as shown in Table 6 and Figure 2.

6.6. Discussion

ChatGPT claims to be ideal, since the beginning of its launch and working on it has become difficult to abandon it, and has become dependent on it in all cases, and when asked, it became dependent on you in everything and what is the solution, his answer was: One solution to reduce dependency on me or any other language model is to improve your own language skills and knowledge. You can do this by practicing reading, writing, and speaking, as well as by learning new words and concepts. Additionally, you can try to think critically and independently, rather than relying on me or other sources to provide you with information or answers. It is also a good idea to fact-check any information you receive from me or any other source to ensure its accuracy.

ChatGPT and other chatbot have impressive capabilities in language tasks such as text generation, language translation, and question answering. However, they also have limitations including:

- Bias: The models have been trained on large amounts of biased text data, which can lead to the generation of biased responses.
- Lack of common sense: While they have a vast knowledge of language patterns, they lack the ability to understand context and general knowledge.
- Safety concerns: The models can be used to generate harmful content, such as hate speech or fake news.

That was discovered ChatSonic is better than ChatGPT in knowing the latest trends and news. It offers more advanced capabilities like up-to-date information on current events, creating art from texts, and understanding voice commands. But chatGPT when asked about anything new, his answer is: I'm sorry, but as of my last knowledge update in September 2021.

7. Conclusion and Future Work

ChatGPT and its alternatives have shown remarkable progress in the field of NLP, offering capabilities such as text generation, language translation, and question-answering. However, they also have limitations including biases in training data, lack of common sense, high computational cost, and safety concerns. In this paper, we have discussed alternatives to ChatGPT, such as Chatsonic and Caktus, as well as traditional Natural Language Processing (NLP) models. These alternatives encompass a range of approaches and techniques for building chatbots. It is important to note that each of these alternatives has its own set of capabilities and limitations.

Chatsonic and Caktus are examples of alternative AI-powered chatbot models that have emerged in response to the popularity of ChatGPT. The specific capabilities and limitations of these models are dependent on their design, training methods, and underlying algorithms.

Additionally, traditional NLP models refer to the more established methods and techniques used in natural language processing before the advent of large language models like ChatGPT. These models typically rely on rule-based or statistical approaches to process and understand natural language. They have their own strengths and weaknesses when it comes to tasks such as text classification, sentiment analysis, or question answering.

It is crucial to consider these alternatives and traditional NLP models when selecting an appropriate chatbot model for a particular task or context. Factors such as the desired functionalities, accuracy requirements, computational resources, and safety considerations should be taken into account when making this choice. Evaluating the trade-offs between different models and their suitability for specific use cases is essential.

By exploring these alternatives and traditional NLP models, we gain a comprehensive understanding of the landscape of chatbot development and the range of available options. It is through continued research and development that we can improve the accuracy, reduce biases, and enhance the accessibility and safety of these models for widespread use across various domains.

Our results showed that the Extra Trees classifier achieved the highest accuracy score of 90%. These findings demonstrate the feasibility of using text classification techniques to develop ChatBots that can accurately predict the class of new responses from users. With further improvements and refinements, such ChatBots can be deployed in various applications, including customer service, education, and healthcare.

Ethical Statement

This study does not contain any studies with human or animal subjects performed by any of the authors.

Conflicts of Interest

The authors declare that they have no conflicts of interest to this work.

Data Availability Statement

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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