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A STUDY AND ANALYSIS ON CHATBOTS FOR BUSINESSES USING BOTSIFY

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Original Article

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Abstract

A bot is a piece of software that executes different jobs and behaves like a human by following instructions. The acronym BOT stands for Build, Operate, Transfer. As a type of bot, chatbots can be thought of as conversational agents and have become extremely useful in the field of human-computer interaction. Advances in deep learning models, language understanding, and the availability of large datasets have led to notable progress in the development and implementation of chatbots. The article examines the essential elements and difficulties involved in developing chatbots. The study discusses a variety of chatbot training techniques, including rule-based systems and more intricate neural network architectures. Botsify is a platform for creating chatbots that also uses artificial intelligence (AI) to improve dialogue. With Botsify's revolutionary power, Chatter-Champion emerges as the prototype of conversational excellence, reaching new heights. Architecture gives board summary and basic implanting methods. The unique needs and interconnections with external systems may influence the actual implementations.

Keywords: Artificial Intelligence, Bostify, Deep Learning Models, Rule-Based System, Neural Network, Artificial Intelligence.

Introduction

The use of chatbots in a variety of businesses has significantly increased as a result of the advancement of conversational technologies. A chatbot is a dialogue system that may text, speak, or act as an embodied agent with many modes of communication with humans in natural language [1]. Organisations want chatbots because they reduce operating costs and offer consumers proactive service and instant assistance [1]. They are widely used to automate a number of processes, including ordering, tracking deliveries, scheduling reservations, and obtaining flight information. They are a desirable option for businesses due to their round-the-clock accessibility and prompt handling of general inquiries. Chatbots are now being utilised in healthcare and private life to offer social and emotional support. Across all domains, chatbots are the communication channel that is expanding the fastest in the world. The advantages of combining chatbot technology with social and service disciplines are compelling organisations to invest extensively in this technology. According to research, customers still find it uncomfortable to communicate with chatbots and would much prefer speak with a real person. Moreover, an examination of chatbot usability and user acceptability indicates that individuals like human-machine interactions and believe that humans are more capable of comprehending them [2]. According to the survey, customer happiness is a crucial factor in the effective integration and implementation of chatbots. Now, it's critical to boost user engagement and happiness with chatbot conversations to provide consumers with a better experience and encourage them to use the technology [1].

Botsify is a robust and user-friendly chatbot development platform that lets businesses and individuals create AI-driven chatbots without needing to know a lot about programming. With a focus on efficiency and simplicity, Botsify enables the creation of intelligent chatbots for a range of applications, including lead generation, customer service, and

automated interactions. Natural language processing (NLP) and Artificial Intelligence Technologies have been driving the development of chatbots in recent years to enable advanced conversational capabilities. Pattern matching and rule-based models have given way to AI-powered deep learning technologies, which significantly improve natural conversational skills in chatbots. The development of chatbots that produce dynamic responses that are not stored in databases has been made possible by advancements in Artificial Intelligence and Natural Language Processing, which simulate natural conversation. Notwithstanding these technological advancements, users become disengaged and frustrated with the chatbots' frequently monotonous and repetitive responses [1].Chatbots are the communication tool with the fastest rate of growth in the world, spanning various domains. Organisations are investing heavily in chatbots because of their enormous benefits when integrating them into social and service disciplines.

A chatbot for a social network serves as the prototype for the question-answer system [2]. Numerous industries, including customer service, e-commerce, healthcare, and finance, have found varied uses for chatbots. Chatbots are excellent in handling simple customer service inquiries and providing prompt answers, enabling human agents to tackle more challenging issues [3].

Healthcare Chatbots: The healthcare sector has seen the rise of creative solutions as a result of technology breakthroughs, and one such solution is the healthcare chatbot. Developing a healthcare chatbot involves a number of difficulties, such as protecting user privacy and security, guaranteeing information accuracy and dependability, handling complex scenarios, understanding natural language, addressing ethical issues, integrating with current systems, and making up for a machine's lack of empathy and human touch [3]. Businesses can engage with consumers personally through chatbots without having to pay for human customer service representatives. Chatbots gather input from every conversation to assist companies in enhancing their goods and services or streamlining their online presence. In order to monitor user behaviour and purchase trends, bots can also capture user data. Chatbots enable companies to interact personally with their customers.

Common goals of chatbots include:

- Customer support: Chatbots are frequently used to offer customers immediate help and support.
- Automated Tasks: Routine tasks like ordering, making reservations, and setting up appointments can be automated with chatbots. This increases productivity and saves time.
- Information Retrieval: Chatbots are capable of retrieving data from external sources or databases and presenting it to users in a relevant manner.

Background and Basics- Botsify is a robust and user-friendly chatbot development platform that lets businesses and individuals create AI-driven chatbots without needing to know a lot about programming. With a focus on efficiency and simplicity, Botsify enables the creation of intelligent chatbots for a range of applications, such as lead generation, customer support, and automated interactions. A chatbot's primary function is to respond to textual or spoken inquiries from users. Following an analysis of user input, the chatbot generates an appropriate answer. The development of chatbots has significantly increased in the past few years, and a wide range of sectors have begun to use them.

Companies use chatbots to automate tasks and respond to customer inquiries in order to provide effective customer service[12]. Chatbots are used for administrative work, student advising, and teaching and learning activities. In the healthcare industry, chatbots are now widely used for psychiatric care and diagnosis review, which has increased awareness. Additionally well- liked as social companions are chatbots. By doing away with time-consuming and repetitive human-agent communication, chatbots provide a cost-effective way to provide services to customers while freeing up agents to work on more complex and high-end tasks.

For system updates, chatbots currently depend on the intelligence of a human engineer. Over the next ten years, chatbots and artificial intelligence (AI) will become more commonplace in technology, making services easier to use. AI is defined as an intelligent technical learning system capable of carrying out tasks that would normally require human intervention [4].

A tool for natural language processing (NLP) is called ChatGPT. It creates responses to text inputs from users using machine learning and artificial intelligence (AI). It implies that you have access to a very intelligent chatbot that has been extensively trained on data [5].

One of the most important technological advancements in artificial intelligence (AI) is the development of conversational agents, or chatbots as they are currently known. Chatbots are becoming more and more common in a number of academic domains, such as education, healthcare, and customer service. The ChatGPT AI chatbot is one of the most potent and widely used chatbot systems.

Natural Language Processing (NLP) - The Natural Language Processing unit is the first section, which uses stemming, tokenization, and lemmatization to process the structured input. Some hatbots use these methods as a preprocessing approach for incoming user requests.

Natural Language Understanding (NLU)- Following its collection by the NLP unit, the Natural Language Understanding (NLU) component receives the structured data and employs a variety of strategies to process it.

Dialog Manager- In order to decide what should be done next, the dialogue manager component looks over the comprehensible structured data, encodes the data while maintaining the conversation structure, including the semantic frame.

AI-Driven Architecture- Chatbots are made up of various vital parts, each of which performs a crucial function and cooperates to form a strong system that successfully accomplishes its goal. Agents that are voice- or text-based may include these elements [1]. These parts are typically arranged in a pipeline according to the order in which they are used.

Chatbots in Small Businesses:
Ever since the introduction of these AI bots, companies have been competing to improve their services. The best part is that chatbot integration is affordable, making competition possible for small businesses as well. The popularity of chatbots has increased as a result of users' ease of use of their social media accounts to interact with their favourite brands and goods. Small businesses can use chatbots to connect with potential customers, increase online sales, generate a significant amount of leads for sales teams, and continuously gather more data from the website.

History of Chatbots

Table 1: Chatbots History

TITLE	ERA	CHARACTERISTICS	KEY TECHNOLOGIES
ELIZA	1960s	Pattern matching is used in a rule-based system to facilitate basis discussions.	Pattern matching
PARRY	1970s	More improved natural language understanding, modelled after a paranoid patient	Rule-based system, simulated human-like responses.
ALEXA	2010s	A feature of Amazon Echo devices is cloud- based voice service.	Natural Language Processing (NLP) voice recognition ,
CORTANA	2010s	Microsoft created a virtual assistant that IS embedded into Windows devices.	NLP, machine learning, voice recognition.
CHATGPT	Present (as of my last update)	Advanced AI that can comprehend context and provide replies that resemble those of a human being, based on the GPT-3.5 architecture.	Deep learning, Transformer architecture, large-scale language modeling.

The life of a chatbot is not easy. People really do judge them. a great deal. They've been branded as clumsy conversationalists, dull, poor listeners, and, worst of all, worthless. In all honesty, there are a lot of awful chatbots available. However, since bots are created by humans, that is not their fault. Therefore, we need to stop blaming the bots entirely and instead look at better methods to create chatbots that are entertaining, useful, and engaging. That's far simpler than you may imagine, which is wonderful news.

Literature Survey

G. Karuna et al. 2023. The paper's main goal is to develop a healthcare chatbot that can provide patients with medical assistance. The AI-powered chatbot for healthcare is intended to help both patients and healthcare professionals. "HELPI," the proposed chatbot, serves as a 24-hour healthcare provider. The system employs Natural Language Processing and Machine Learning Techniques, including decision trees, to evaluate symptoms provided by the user and precisely identify particular illnesses or diseases. It then provides recommendations for appropriate medical care and makes pertinent drug suggestions[1].

Tawfeeq Flaih et al. 2023. The popular natural language processing model ChatGPT AI chatbot's ethical implications are examined in this paper. After introducing the technology and outlining the complexities of its ethical implications, the study provides background information and a literature analysis on artificial intelligence (AI) ethics, ethical considerations for chatbots and conversational agents, and current research on the ethical implications of ChatGPT AI. The section on ethical implications looks at potential problems like invasions of privacy, bias, unfairness, and malicious usage, as well as how they affect social skills and human interaction. After that, the study critiques current ethical laws and guidelines and suggests changes to ChatGPT AI's ethical standards. This review discusses the importance of moral considerations in the development and application of the ChatGPT AI chatbot, the need for a multidisciplinary approach to address the moral ramifications of the technology, and final thoughts and suggestions for moral application[2].

Ghazala Bilquise et al. 2022. The field of interaction is being revolutionised by conversational technology between humans and machines. More and more, chatbots are being used in place of human agents to carry out tasks, respond to inquiries, offer guidance, and offer emotional and social support. For these technologies to be successfully integrated, user satisfaction with them must be increased. Researchers are using Natural Language Processing and Artificial Intelligence Techniques to give chatbots emotional intelligence capabilities. An organised overview of the literature on creating emotionally intelligent chatbots is given in this paper. We collect and examine 42 articles that have been published in the past ten years using a methodical approach. The goal of the review is to offer a thorough examination of previous research in order to identify the issues raised, the methods applied, and the assessment metrics utilised by studies on embedding emotion. The majority of research, according to the study's findings, is built around an open-domain generative chatbot architecture [3].

Sage Kelly et al. 2022. Chatbots that use artificial intelligence (AI) to augment human capabilities at a low cost are poised to become the seminal technology of the ensuing decade. Further study is required to assess people's behavioural intentions to utilise this technology once it is made available to the general public. The research assessed consumers' behavioural intentions about the usage of Artificial Intelligence chatbots in three different industries: Mental Health Services, Online Shopping and Banking. It did this by applying an extended version of the Technology Acceptance Model or TAM, which included indicators of privacy concerns and trust. Because regular chatbots are currently very popular in these fields, these services were chosen. An online cross-sectional survey with 71 items was completed by participants (N = 360, 202 females) between the ages of 17 and 85 (M = 38:17, SD = 17:66)[4]. Ludmila Shchegoleva et al. 2021. The article talks about a question-and-answer system prototype that Petrozavodsk State University is using to automate work with applicants during their admissions campaign. The three primary methods of automation are question classification, response template creation rules, and search engine vector modelling for a list of potential responses. The question-answer system is built on natural language processing techniques including tokenization, lemmatization, morphological analysis, and syntactic analysis [5].

Faisal Yousafzai et al, 2023. By building the LDF-score (0,2)-ideals in an AG-groupoid and the LDF-score left (right) ideals using the concept of a score function, the study investigated the idea of linear Diophantine fuzzy set (LDFS). These newly constructed LDF-score ideals were used to an AG-groupoid description. Next, we utilise the proposed framework for multiattribute decision-making, considering the selection of chatbots with artificial intelligence and bridge designs [6].

Su-Mae Tan et al, 2022. Most chatbot interfaces used in contemporary m-commerce systems have a single chatbot that provides suggestions for each category of products. On the other hand, an increasing amount of research is being done on multi-chatbot systems, which designate different chatbots advisor duties according on a product or topic. Conducted an online between-subjects experiment to fill the study vacuum by analysing the ways in which different m-commerce chatbot interface styles can affect purchase intention, social presence, source legitimacy, and trusting beliefs. Studies comparing the effects of single versus multi-chatbots in the context of m-commerce are scarce [7].

Andrea Cuadra et al, 2023. Each participant received a voice-first ambient interface (VFAI), and through the usage of log reviews (4,657 entries), phone and recurring topic interviews, text support, and participants' trips were meticulously monitored. The life experiences of the participants influenced how they interacted with their VFAI and perceived it, which led to insightful discoveries about how to design for a range of needs[8].

C Kishor Kumar Reddy et al, 2020. Because of the diabetes raises likelihood of developing significant detrimental effect on our bodies, increasing the risk of renal illness, heart disease, eye disease, nerve damage, and blood vessel issues. presented in the paper is a decision tree model known as the Diabetes Prediction System with Supervised Learning (SLDPS). The data set is captured by IoT sensors. In contrast to previous classification models in the literature, this model's classification accuracy climbed to 94.63% when the data set was rebalanced, suggesting promise [9].

C Kishor Kumar Reddy et al, 2021. The research is done using openly accessible meteorological and the energy data from a wind farm. The analysis of the relationship between the various energy output factors. When given weather data, the output(energy) is predicted with high reliability by the energy prediction model that was developed [10].

C Kishor Kumar Reddy et al, 2019. We are entering the new invention of omnipresence, governed by the Internet of Things, as the area is evolving due to advancements in computer technology. IoT is evolving quickly and seeking out every person's benefit. Almost every topic is using this trending innovation: engineering, medicine, business, services, transportation, administration, etc[11].

Gwendal Daniel et al, 2023. Applications for chatbots (and voicebots) are being used more often in a variety of industries, including customer care and e-commerce, to facilitate direct communication between businesses and end customers. To make the definition and implementation of these easier, several frameworks have been created[12].

Eleni Adamopoulou et al, 2020. History, Technology, and Applications of the natural dialogue systems also known as Chatbots are covered in the survey. Its objective is to organise significant data that provides background information for next chatbot studies. More precisely, they identified potential shortcomings at each stage as they outline the historical development from the generating notion to the present. Following the presentation of a fully functional categorization system, they examined the two key technologies for its implementation: machine learning and the pattern matching technique. Additionally, they created a broad architectural design that gathers important elements and pointed out important considerations that must be made prior to system design. In addition, they outline the industrial use cases and applications of chatbots and highlight the hazards associated with their use [14].

Alaa Aloqayli et al, 2023. The chatbot for admission was developed using the Botsify platform. Forty-two postgraduate students, the majority from Princess Nourah University, clicked on the chatbot link. These pupils engaged with the chatbot by posing a lot of queries and getting answers from it[15].

Eleni Adamopoulou et al, 2022. Its goal is to arrange data that is important so that can serves as background knowledge for research on upcoming future chatbots. More precisely, they identified potential shortcomings at each stage as they outline the historical development from the generating notion to the present [16].

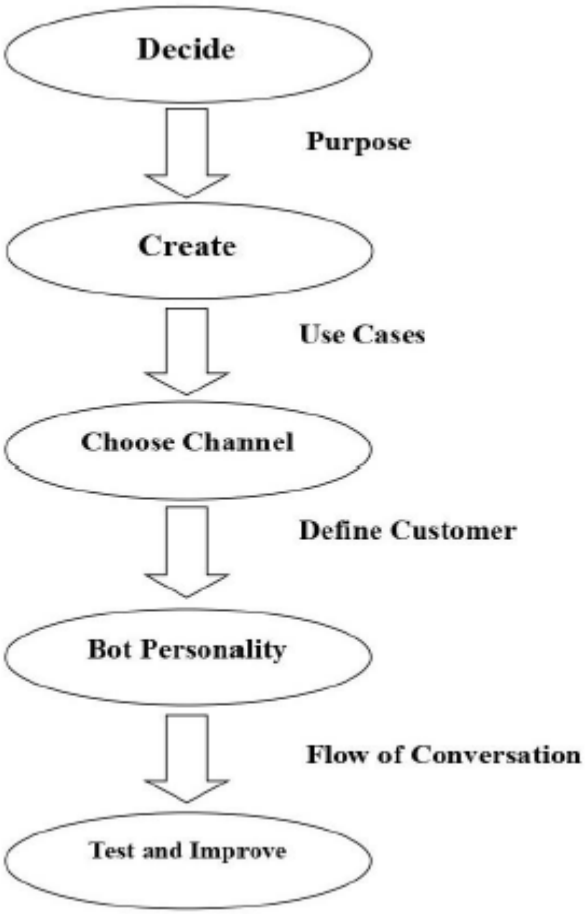
Edyta Gołąb et al, The goal of study is, to illustrate value of artificial intelligence (AI) and provide instances of the AI-based solutions for improving (creating, assessing, and overseeing) customer engagement on social media in the education sector. One of the important non-financial metrics for business performance in digital marketing strategies nowadays is CE. In a case study involving the higher education sector, The study presents a decision support system (DSS) built on AI-based technologies for social media engagement management [17].

Sandeep A. Thorat et al, 2020. Gave a thorough analysis on the use of rule-based chatbots. The research addresses the measures used to gauge the effectiveness of chatbot systems. The research does a comparison of Google Dialogflow and IBM Watson, the two most popular frameworks for developing rule-based chatbots. The study finishes with a list of expectations for future chatbot systems [18].

Ruby Chanda et al, Technology advancements have made a wide range of tools available to AI users. The acceptance and attraction of using chatbots has increased over time. Numerous sectors, like as banking, healthcare, and e-commerce, already use it to provide services to their customers.Chatbots possess the ability and scope to offer personalised services to a large number of users.But the potential for chatbots to teach "remains to be investigated. "Chatbots can now be included into a range of teaching strategies thanks to artificial intelligence.These days, this mechanisation is heavily utilised in education. By providing quick and personalised services, chatbot technology has the potential to benefit all parties involved in the industry, including students and staff at educational institutions [19].

Connectivity Diagram

Fig 1: Connectivity Diagram



After the chatbot is put into use, continue gathering data and evaluate its effectiveness. Establish success metrics first. Some examples of these include time spent on each customer query or completed conversations. Next, see how your bot is performing. Bots aren't perfect, just like people, and they can always get better. However, if you follow these guidelines, you'll undoubtedly have a fantastic chatbot for your business that will benefit both you and your clients.

Key Features of Botsify:

Drag-and-drop Interface: Botsify frequently provides a drag-and-drop visual interface that enables users to easily design and customise their chatbots, even for those without a lot of coding experience.

Integration: Businesses can reach their audience through multiple channels by using Botsify's ability to integrate with a variety of platforms, including websites and social media channels like Facebook Messenger.

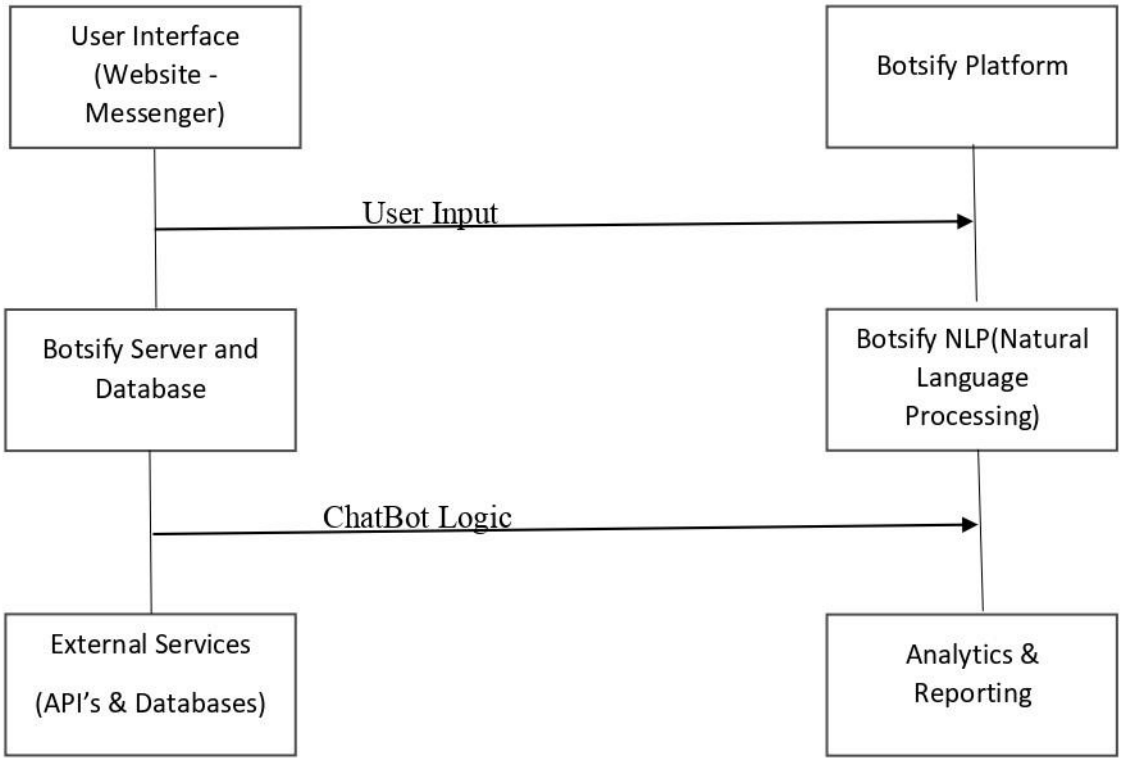
Natural Language Processing (NLP): Botsify usually includes NLP features, which enable chatbots to comprehend user input and react more naturally and contextually.

Multi-Platform Support: Botsify might be able to be deployed on multiple platforms, giving users interacting with the chatbot via a variety of channels a smooth experience.

Automation: Businesses can automate responses to frequently asked questions and streamline customer interactions by utilising the platform's automation features.

System Architecture

Fig 2: Creating Chatbot using Botsify Platform



Explanation:

1. **User Interface:** Represents the interface through which users interact with the chatbot. This could be a website, messaging platform (e.g., Facebook Messenger), or any other user interface.

2. **Botsify Platform:** The Botsify platform serves as the central hub for chatbot development and deployment. Users design, configure, and manage their chatbots using Botsify's tools.

3. **User Input:** Users input their queries or requests through the user interface. These inputs are sent to the Botsify server for processing.

4. **Botsify Server and Database:** The Botsify server receives user inputs, processes them, and interacts with the database as needed. The database stores information related to the chatbot's configuration, user interactions, and other relevant data.

5. **Botsify via Natural Language Processing(NLP):** Botsify employs NLP to comprehend and interpret user inputs. This component is responsible for extracting meaning from the text and determining the user's intent.

6. **Chatbot Logic:** The core logic of the chatbot resides here. Based on the user input and the information processed by the NLP component, the chatbot determines the appropriate response or action.

7. **External Services:** The chatbot may interact with external services, such as APIs or databases, to fetch or update information. For example, it might pull data from a CRM system or an external knowledge base.

8. **Analytics & Reporting:** Botsify's analytics and reporting component tracks user interactions, collects data on chatbot performance, and generates insights for analysis and improvement.

This diagram provides a high-level overview of the architecture. Actual implementations may vary based on specific requirements and integrations with external systems.

How Botsify Operates:

Establishment: Initially, users register for an account on the Botsify platform and specify the objective and reach of their chatbot.

Planning: Users can customise the chatbot's appearance, set up responses, and design conversation flows through the user-friendly interface.

Implementation: Implementing chatbots on websites or messaging apps is made possible by Botsify's support for integration with a number of different platforms.

Preparation: With the tools provided by Botsify, users can instruct the chatbot to comprehend user inquiries and offer pertinent answers.

Organising: After setting up, the chatbot is ready to engage with users, respond to their questions, and carry out automated duties.

Conclusion

Enhanced customer engagement: Botsify's chatbots can help enhance customer engagement and forge closer bonds with clients by responding promptly and accurately. Businesses looking for the use of conversational AI have a strong option in Botsify. Personalised and extremely responsive chatbots can be created with its advanced natural language processing (NLP) capabilities and user-friendly interface. Chatbot performance could be further improved by adding more sophisticated machine learning techniques and improving natural language understanding. It would become more accessible and appealing to a world-wide audience.

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