

An ML Based Chatbot for Queries using a Distributed System

Abstract—Chatbot is an existing computer program Communicates with users using common language. Our project is "Messenger Chatbot". We have worked with the data of a university. We have added a voice system that will answer the voice questions correctly. The computer on which we set up the chatbot application one computer can process 10 at a time. To do more than this, add the next one to another computer and serve the next 10 processes in exactly the same way. If a user terminates his service from the first computer at a time and leaves From the server, then the computer will quickly complete 10 processes with one by converting a process from the second computer. We've worked with new student admissions data and old student university all data.

Index Terms—Chatbots, Machine Learning (ML), Artificial Intelligence (AI), Question Answering system, Audio Voice system, Natural Language Processing (NLP).

I. INTRODUCTION

Chatbot is a computer program that mimics human conversation through voice order or text discussion or both. Chatbot, abbreviated to chatbot, includes a man-made brain power (AI) that can be installed and used through any significant informative application. There are several equivalent terms for chatbots, including "talkbot," "bot," "im bot," "intuitive expert" or "mock discussion element." Innovative reformist development has seen organizations move from traditional to computerized to run with buyers. Through innovation, housing companies are completing AI processes at their advanced stage. One AI method that meets its application and usage is Chatbot. Some examples of chatbot innovations are remote helpers like Amazon's Alexa and Google Assistant, and apps like We Chat and Facebook Courier. A chatbot is a computerized program that communicates with clients like humans and does not cost anything. Chatbots take care of clients consistently day and week and are not limited by time or actual area. This makes its implementation attractive to many organizations whose representatives may not have the labor or financial resources to do the job [1].

Chatbot is a computer program designed to mimic human conversations using artificial intelligence (AI). In that paper they provide a chatbot design, which provides an efficient and accurate answer to any question based on a dataset of frequently asked questions. This chatbot can be used by any university interested in interactive fashion to answer frequently asked questions [8]. In that paper, they gave a brief overview of some of the applications that use AIML

chatbots for their conversation services. Those applications relate to cultural heritage history, e-learning, e-government, web base models, dialogue models, semantic analysis frameworks, interaction frameworks, humor experts, network management, adaptive modular architecture. In this case, they not only provide useful services but also communicate with customers and solve their problems through AIML chatbots instead of people [9]. Nowadays it is the age of intelligent instruments. With the advancement of artificial intelligence, machine learning and deep learning, machines have started to disguise themselves as human beings. That paper presents a study on existing chatbots and the techniques applied to them. It discusses the similarities, differences and limitations of existing chatbots. They compared the functionality and technical features with the 11 most popular chatbot application systems [10]. The work is an electronic chatbot. A chatbot named "UNIBOT" has been created. It gives the client a productive and significant response by comparing it to the message they enter [11].

Here a behavioral perspective on the use of a medical chatbot based on Planned Behavior Theory (TPB) examines behavioral perspectives and changes in malicious behavior based on the Trans Theoretical Model (TTM) from a patient perspective and analyzes how far chatbots are useful for that purpose. Since most of the existing scientific work on chatbots is related to technological development, there is a research gap on the behavioral effects of chatbots [12]. This research paper describes and suggests the development of chatbots that act as a conversational agent that can help students play a role as candidate service, this chatbot is called Dina. Dinosaur intelligent assistance, the range of languages understood by dinars [13].

The paper reminds us that although Chatbots are designed to mimic ordinary people's conversations, they are still far from being able to pass the Turing test [16]. Chatbots have many uses for customer service, request forwarding or data collection. By the end of 2020, Gartner Inc. A survey predicts that by the end of 2020, 25 percent of consumer services and support activities will use Virtual Customer Assistant (VCA) technology, including chatbot. Calls, chats and emails using virtual assistants are also reported to be reduced by 70 percent. Technology giants have already invested in this domain, creating products like Amazon Lax, Google Cloud Dialog Flow and Microsoft Azure Bot. [18]. They want to improve the Throw AI system in the areas of inter-networking

and information technology. This bot is an internet application that will copy people's discussions, examine user's questions and then answer questions. Users can ask about college related activities then Chatbot will answer in normal language [20].

This paper summarizes the ALICE Chatbots and their experiments for structuring (AIML) and creating them automatically. Chatbot uses NLP to analyze and process natural language reading with AI. It will review the growing use of Chatbots in the banking industry [22]. A disease is a condition that impairs the proper functioning of the body or a part of it. Hundreds of different diseases survive. Each has its own set of symptoms and signs, the clue that enables a physician to diagnose the problem. A symptom is something that the patient may recognize, such as fever, bleeding, or pain [23]. This paper shows the integration of AI-centric Chatbots in the education system. The paper, through literature review and data analysis, discusses the current state of chatbot use in India and addresses the differences between the traditional education system and the AI-chatbot education system [25].

Chatbot that sounds like a human creates more customer engagements. Chatbots are used in many of our apps. Example: - "What's-app", "Face-book", "Google-app", "Messenger", "Instagram", "YouTube" etc. We'll create a chatbot that's user friendly and gives value to our customer so that our chatbot can communicate with a real person behaving like a human. In this project we will work on a University messenger Chatbot. Where students will get all their admission information for new admissions. University students will be able to know in detail about their Department. Their Department, course, subject, years, cost, thesis, credit, lab, semester etc. Examples: - "How many years of undergraduate graduation", "How many years of postgraduate", "How many semesters per year", "Cost per semester", "Total expenditure", "How many departments graduate", "How many departments postgraduate?" etc. Anyone can create chatbots for any business the same as they recruit a person for any department of their company. Whether they are a Wedding Planner, Insurance Assistant, Education Consultant, Legal Assistant, A real estate business, Recruiter, Travel Agency, Hospital or a Beautician. Anyone can create the bot for any of the fields they want to start their business in. These chatbots are mainly used to provide student support. It helps in providing a huge amount of target students at the same time 24/7. Can Schedule university's latest newsletters, auto-sequences. Create conversational forms and save all the data on spreadsheets. Chatbot is very intelligent so we'll train it once and it will communicate with our target students in its language. While none of the people are available for replying then the bot can provide information to the students anywhere in the world.

II. LITERATURE REVIEW

Creating a chatbot that can talk to people on open space topics in general and reliably expands research interests over the years. An important function of chatbots is to determine the response, which is expected to select the best integrated with the feedback from the given up-and-coming given the setting of the discussion. Preliminary feedback investigations use the last expression of the setting to coordinate with only one answer, which is characterized as a single counter-response choice (Wang et al., 2013).

Past research has included the Undertaking Focused Discourse Framework, which centers around finishing assignments in vertical spaces, and chatbots, which are expected to joke with people reliably and in general at open-area points. Most current chatbots are information driven, either in a design of data recovery or succession age (Ritter et al., 2011). The recovery-based structure appreciates the convenience of useful and familiar feedback as it shows through a huge discourse vault and selects the competitor that best matches the current setting. Age-based models; Then again, take the example of the response from the discourse and add new feedback directly. Queries can be sorted into single-turn and multi-turn [6], depending on the response choice.

ELIZA was seen as one of the first chatbots. ELIZA investigates input sentences and makes its response dependent on data retrieval leads that are related to data dissociation. It often creates the impression of thinking about its clients, but it does not contain any memories of the discussion so it cannot go into any kind of attentive collaboration or arrangement. The syntactic language handling used by ELIZA has increased significantly, encouraging the advancement of different languages in chatbot creation [3].

According to the research paper, people learn language subconsciously using abstraction techniques without even realizing it [14]. The paper mentions that there are currently two existing methods of creating chatbots - using the generative based model or the recovery based model [15]. This paper presents a comparison of multiple (13) different implementations of Chatbots in different environments as well as discusses the general workflow of how Chatbots work [16]. This research paper reviews the current status of existing Chatbots such as "Amazon's Ale-xi, Microsoft's Cortana and Google's Google Assistant". The features used in these bots are limited because they are highly commercialized and other bots are exceptionally specialized for running small start-ups and large companies or partnerships [17]. In this paper they want to show the results of people's perception and trust about Chatbots and talk bots. They are going to judge the chatbot by asking the question, do they behave the same as humans? [20]. In this paper they actually examine some recent AI patterns and activity and offer some alternative

theories of change over time. They show how a chatbot in the banking industry changes the way customers communicate. This will further explain whether a chatbot can meet the changing needs of the customer [22].

In that work they created FAQs about the university, and an interactive chatbot for the workflow of the proposed structure. As a rule, user discussion starts with welcome or common questions. User searches are first handled by an AIML check piece to check if it is an AIML script. There, AIML is characterized by general search and welcome that are answered using AIML formats. This operation is divided into three parts: 1. The user posted the question on the chatbot. 2. Processed user queries to match developer default layout. 3. Pattern matching takes place between user-entered questions and knowledge (patterns). Finally, pattern-based answers are presented to the user to answer their questions [8]. They depict applications integrated with AIML based chatbots. They mentioned several of these tasks that Implemented AIML Chatbot with additional packages. Multimodal Private Virtual Guide for Cultural Heritage Sites, Natural Language Management for E-Learning Platforms, Integrated e-Government System, Intelligent Education, Web-Based Voice Chatbot, Agent-based semantics-conscious interoperability framework, automatically extracting dialogue models, interactive framework with multimodal embodied relevant understanding, humorist chatbot system, Dorothy network management chatbot, modified chatbot [9]. They have divided the chatbot applications into four groups namely target-based, knowledge-based, service-based and feedback-based chatbots. They have focused their research on response-based chatbots. In that section, they also mentioned the various response models that have been created based on four categories-template-based models, generative models, recovery-based models, and search engine models [10]. The majority of chatbots respond by default when no matches are found. Chatbots can offer a wide range of data according to the designer's setup [11]. Following this assessment that most of the existing scientific work on chatbots is related to technological developments, the existing notable scientific work related to medical chatbots was included in peer review journals and conferences on behavioral change perspectives and produced a comprehensive literary review [12]. Chatbots are implemented to meet the academic information needs of new student candidates. The proposed system successfully maps and recovers data, helping the user to get answers without having to wait for the admin staff to reply [13].

The underlying point of creating the chatbot structure was to discuss people and imitate interested clients. The main attempt to assemble the chatbots was Eliza, which was created in the 60's in imitation of Joseph Weizenbaum Clinical Medicine as a Psychotherapist (Weizenbaum, 1966, 1967). Thought was based on a combination of basic and watchword. Data is evaluated for the presence of a watchword. On the occasion of the discovery of such a word,

the sentence is planned by a value related to the watchword; If not, an attached free comment, or a previous change under certain conditions, is restored. For example, if the word "mother" is included in the information, Elijah may respond "Tell me more about your family." This value is inspired by the assumption that mothers and families are fundamental to psychological problems, so a specialist should ask the patient to talk about their family; Yet the ELISA program does not actually 'understand' this mental system, it simply matches the watchword and distorts an ideal response [5]. A.L.I.C.E. A chatbot created using Artificial Intelligence Markup Language (AI-ML), which has been created in recent years. Chatbots rely on classifications containing a boost, or a layout for design and response. The classification design is adjusted to track the most appropriate response for client input. Further AI-ML labels adjust the thinking to determine the setting, how to expand the contingent and how to provide new responses.

The Jabber- wacky chatbot is part of a plan to create "characteristic human conversations in captivating, interesting and fun ways." Jabber-wacky gains from all its past discussions with people. It works by removing what has been said and combines appropriate context-based examples of use with methods to choose the most appropriate response. It has no hard-coded rules, but relies entirely on past discussions. It is clearly not expected to do anything 'valuable', but just to talk [3].

Verifying educational records in an advanced educational institution is an exceptional requirement for both beginners and parents of understudy. Although the framework is generally effectively accessible as a site, it is still considered very confusing that it should include a problematic verification measure, especially for parents. Nowadays, visit applications are widely used in the local area by both young and surprisingly old. There are many visit applications that are commonly used, including WhatsApp, Line, Telegram and Facebook Messenger. The Visit application provides an application programming interface (API) administration for sending or receiving messages. In this way, the API can be used to create applications (chatbots) that will serve as client visits. In this experiment, chatbots were created using the administration of telegrams. This is because sending messages via telegram is free. The information served is information on student participation in conversations, grades and financial records. With the help of this application, a school can provide educational records to the parents of the students effectively, financially, and whenever possible. Through this application, a school may provide offices for under-study or under-study parents so that scholarly records can be viewed effectively, economically, and whenever available [2].

Today's business chatbots, for example, have been created through the invention of the lingubot, providing the conditions for modern advances that allow the structure of complex

conversation experts to conduct complex, objective drives. In ‘lingubots’ both the word and the syntax of the client’s information are divided using modified formats. It works with the development of a client model, which is related to conversations and clear words in exchange for determining the response of the chatbot. Responses may include further discussions with the client, interacting with or keeping in touch with external structures (for example opening a website page or updating an information base), or a combination thereof. This rich opportunity for feedback enables account-based discussions with clients and gives clients the ability to return to their workload if they move away from the content of a long-running conversation [3].

III. METHODOLOGY

A. Concept

A chatbot is a product application that leads an online visit discussion via text or text-to-speech to a live human expert instead of direct communication. People create responses depending on the semantic and practical conditions, including the co-reference connection between the exchange elements and their unique situation. Figure 1 and Figure 2 show the chatbot demo.

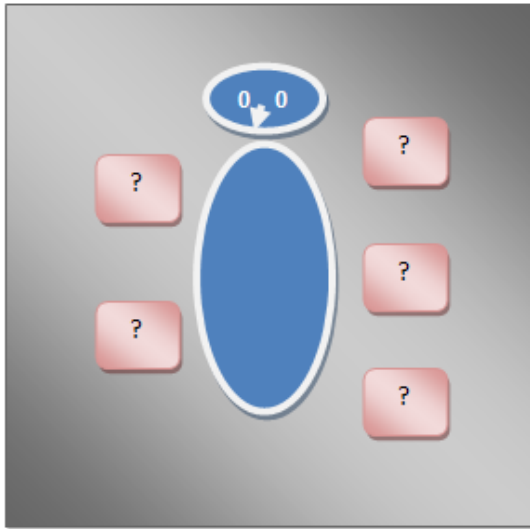


Fig. 1. Chatbot Demo-1

People create responses depending on the semantic and practical conditions, including the co-reference connection between the exchange elements and their unique situation. Chatbot is a PC program that collaborates with clients using common dialects. This invention began in the 1960s; The point was to test whether the chatbot frameworks could fool clients that they were real people. Either way, chatbot frameworks don’t just work to reflect people’s conversations

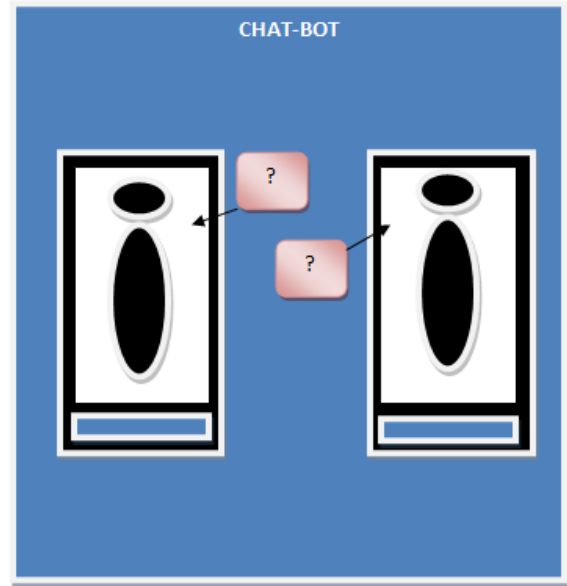


Fig. 2. Chatbot Demo-2

and engage clients. Creating open space chatbots for AI research is a difficult area. Although previous work has shown that scaling the neural models to the extent of the border and the size of the data that has been prepared gives improved results. The results of human evaluation depend deeply on the correct set-up one picks. Specific guidelines given to model execution evaluators, such as a specific point or not, may be strongly influenced by the length of the general discussion and the decision of the human interlocutors, which may be difficult to record together [5].

B. Proposed Model

In this paper we used Artificial Intelligence Markup Language (AIML) and Latent Semantic Analysis (LSA). Template based and general questions such as welcome / greetings and general questions will be answered using AIML and other service-based questions using LSA will provide user satisfaction at any time. Artificial Intelligence Markup Language (AIML) and Latent Semantic Analysis (LSA) are used to create chatbots, which raise common questions such as how do you do it? The answer to the same question. LSA is a latent semantic analysis, which is used to discover similarities between words as vector representations. So that the unanswered questions of AIML will be seen as an answer by LSA [8]. They focus on a number of applications that implement AIML-based chatbots with additional software packages to build efficient applications. They feature images of some integrated systems that add AIML-based chatbots to their systems to interact with users. A variety of APIs and packages with lightweight AIML files make this system more flexible and interactive for use in a variety of fields.

Also, automated conversation-based agent-based systems play an important role in communicating with the user [9]. The purpose of their research is to explore the ability of the deep nervous system to engage people in conversation, as well as to overcome some limitations of statistical models and implementation methods [10]. The calculation described in this study can be used as a back-end for nurturing Android chatbot applications, while static chatbots only include viewing strings, although Unibot uses dynamic methods such as pre-processing messages before seeking a response [11]. Here is a literary analysis of how people feel about using a medical chatbot. Input is translated in a machine-understandable format using natural language processing (NLP) [12]. This paper describes a method of developing chatbots for college management systems using AI. Chatbot mimics conversations in the form of computer programs that can communicate with users in natural language [13].

This paper discusses how neural networks work and how they can be used to create a chatbot to learn how to respond to human interactions through in-depth learning methods [14]. The paper proposes a new approach using deep neural learning, where a multi-layered neural network is applied. This paper uses a dataset related to an open source healthcare service competition, retrieved from Kaggle, which contains patterns and responses in a question and answer format. Being a small dataset, writers had to be careful in training. The paper uses 5 different optimizer algorithms - SGD, AdaGrad, AdaDelta, RmsProp and Adam [15]. These are ELIZA (the first recorded example of an AI chatbot developed for the study of conversation between humans and machines), JABBER-WACKY (the first chatbot that receives audible voice as an input parameter using relevant pattern matching), Matching techniques have been used [16]. If a user asks a question after logging in, the Word-Net Algorithm will identify the keyword from that query. The questions will then go through the tokenization and lemmatization process. An appropriate response will then be explored in the knowledge database using the Word-Net algorithm and sentence analogy. Admin can perform many functions like login, add query, view dataset, delete query, change password etc [20].

Only Americans who can read English and are over 18 can participate in their online survey. When the customer communicates some parts will be handled by humans and others bots and vice versa. If the customer uses telephone (human / Talbot) will work, if the website will perform (human / chatbot). Then some questions will be asked and results will be taken [21]. They give some coding examples of atomic, default and recursive which are three different sections of ALICE / AIML. Then they offer a framework for chatbot interaction. Where the user can open an account with certain parameters. After submission it will show the account information and then the user can connect to the Chatbots. Then they do some turning testing to judge between machine and human [22]. The first step in designing the proposed

architecture was to identify the way students were learning and the type of question. Due to the nature of students' curiosity and the specificity of the subject, different types of learning needs (tendency and deductive) have been identified [26]. Later, the modules create an answer to satisfy the student's request. The answer is returned to the student, and feedback is collected to evaluate and improve the model [24]

A chatbot is often described as one of the most advanced and promising expressions of interaction between humans and machines. However, from a technical point of view, a chatbot represents only the natural evolution of a question-answer system that uses natural language processing (NLP). Formulating answers to questions in natural language is one of the most common examples of natural language processing applied in end-to-end applications of various initiatives. Chatbot is artificial intelligence (AI) software that can mimic conversations (or chats) in natural language with the user through messaging applications, websites and mobile apps or telephones. Which is 6, 7 Our data set. Figure 3 shows the workflow diagram of our proposed model. Here's how our chatbot works:

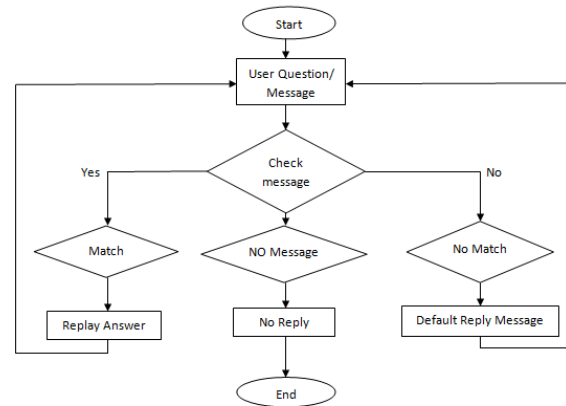


Fig. 3. Workflow Diagram

1. First, the user will ask a specific question. Chatbot will then check if the message matches any of the bot's questions.
2. The input string will be typed, specific questions and answers are fixed in the back-end, the back-end will not be accessible to the user, only the front will be accessible to them.
3. If the user asks a question in any size (uppercase / lowercase), our chatbot questions will still be well understood. However, the chatbot will answer the question whenever the answer matches the question fixed in the backend accordingly.
4. The bot will show the answer to that specific question and wait for the user to answer again.
5. If the message does not match any query, the bot will reply to the default message to the user.

6. When the user gets the desired answer to the question and if he has no more questions, the conversation will end.
7. We used "python", "Django" language to develop chatbots.
8. Chatbots can learn automatically by analyzing past data and guessing what is correct.
9. Another way chatbots can learn is by editing a system. In most cases, both are required.
10. Even though a chatbot has artificial intelligence, a human needs to monitor responses in order to adjust.

```
'hi there !',
'what is your name ?',
'my name is Bot, i am created by Hasib',
'how are you',
'i am doing great these days',
'thank you',
'in which city you live ?',
'i live in dhaka',
'in which language you talk ?',
'i mostly talk in english'
'vice chancellor?',
'professor vincent chang, phd',
'vice chancellor email id ?',
'vc@bracu.ac.bd',
'cse department dean name ?',
'mahbubul alam majumdar, phd',
'cse department dean email id ?',
'majumdar@bracu.ac.bd',
'vice chancellor email id ?',
'vc@bracu.ac.bd',
'Undergraduate cse total cost ?',
```

Fig. 4. Data-Set

IV. RESULT AND ANALYSIS

A. Result

Chatbots are systems that enable users to communicate in natural language that mimics interactions with real people. Chatbots is a small program that helps you automatically mimic conversations with customers based on predefined terms, triggers and or events. The best benefits of using this chatbot are:

1. It can be active or reactive
2. Its responses are consistent every time.
3. It can respond to students immediately.
4. It can help you gather important information and learn from the information collected.

Most of the time in the moment of truth, students should go to the universities to collect various information such as tuition fees, term schedule, etc. as per the time of admission or permission of admission or according to their daily needs. This computer program can communicate with people using

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'mahbubul alam majumdar, phd',
'cse department dean email id ?',
'majumdar@bracu.ac.bd',
'vice chancellor email id ?',
'vc@bracu.ac.bd',
'Undergraduate cse total cost ?',
'12,00,000',
'msc in cse total cost ?',
'2,60.000',
'artificial intelligence project ?',
'md. golam rabiul alam',
'networking related project ?',
'dr. amitabha chakrabarty',
'multimedia related project ?',
'md. ashraful alam',
'data base related project ?',
'dr. amitabha chakrabarty (ach)',
'linux project',
'mr. moin mostakim',
```

Fig. 5. Data-Set

programming languages. The program will select from the nearest matching question that is already stored in the program. Here, we are setting a small specific information for both the question and the answer, thus using a programming language to get the output. Figure 8 shows the chatbot window.

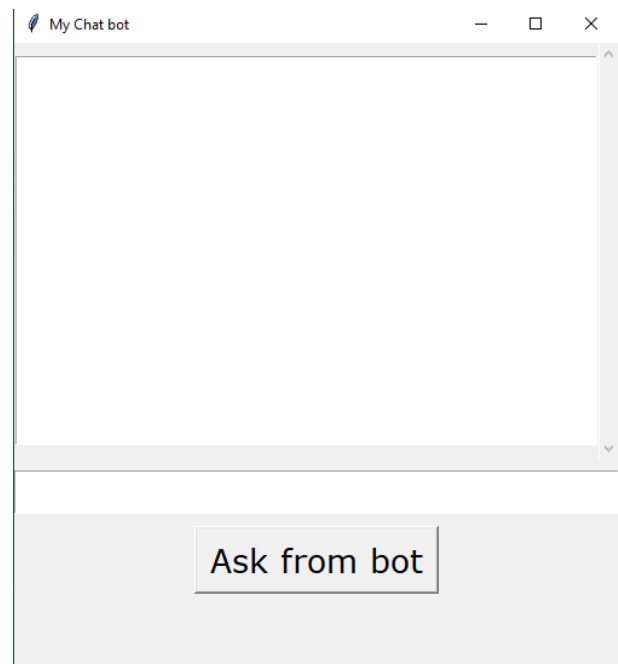


Fig. 6. Chatbot Window

Our chatbot is giving good performance. If a word

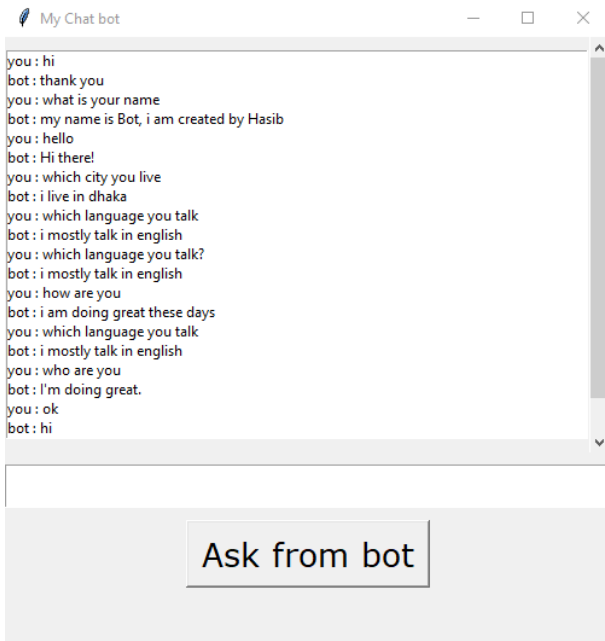


Fig. 7. Output

is misused during a user's question, our chatbot will check the correct question and give the correct answer. In this project, the accuracy of this chatbot is 90-95 percent Figure 9.

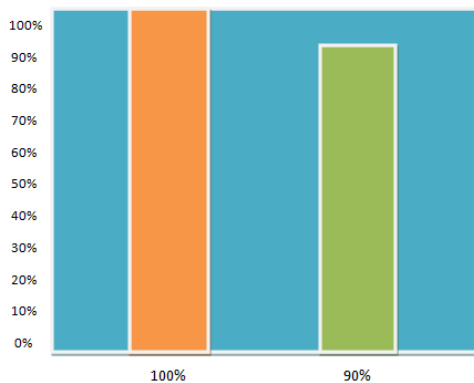


Fig. 8. Accuracy

Discussion of existing Chatbots only [14]. Final results show that the optimize-rs mentioned above have improved chatbot performance. [15]. The authors concluded from their study that generative models based on deep learning are most effective in creating Chatbots, and when combined with retrieval-based methods they can achieve much better results than other methods if large amounts of useful data can be used bot training [16]. The new advanced artificial intelligence technology has the potential to enhance the customer experience

by providing excellent service in the following ways and will be popular with modern customers [19]. From that survey, people think that if there is a chance of violation of respect, it is unacceptable for both bot and man [21]. This paper explains how we can conduct a dialogue based on ontology in the field of banking and finance [22].

B. Analysis of our Chatbot Project

We wanted to evaluate the prototype in the right context. As mentioned earlier, most of the new students are now more or less 'integrated' so we could n't test "actual potential users". However, we consider students as a good option as they have been in this situation before and a group with which we can easily communicate. We listed a set of questions and tasks, which we asked participants to answer and perform. We've included some control questions with the chatbot to test participants' experiences and see if they have any suggestions for further improvement. The assessment ended with a brief talk about the experience, where we were open to any kind of feedback the assessors could give. Due to the time and capacity of this project, we decided to include 50 participants as evaluators. The number of participants was also chosen on the basis that 50 participants could contribute 90-95 percent to get usable error free answer.

The assessment was formed as a constructive usability test where the goal is to look at quality metrics rather than measurements. In the assessment we wanted to combine short semi-structured interviews with users performing tasks because it could give us more information about the experience outside of metrics. Assessments were made with some participants. We further discovered that it is case sensitive which we changed before the next session. In general, the assessment has been good and we have gained a lot of insights from the participants. All of our participants reported that they had previously interacted with chatbots, but had very little knowledge of how they worked. They found the chatbot nice to interact with and enjoyed that it was friendly and casual.

V. CONCLUSION

Under this project, we have analyzed the technical aspects of creating chatbots for the purpose of performing interventions of different universities. The most common language used for chatbot communication is English. Chatbots usually have 4 main components: text comprehension module, dialogue manager, database level and text generation module. The most common strategy for developing chatbots is to use a string-matching algorithm and a set of scripts that contain sample inputs and outputs. Judging from the various studies, we can conclude that chatbots are becoming increasingly popular for university applications, especially when miscellaneous information about the university is known. Adoption of artificial intelligence-based strategies has recently increased. Some development methods are better

than others for creating chatbots for information from certain universities. Future studies can be conducted to combine the development strategies of chatbots with their best results. It is important to have a more in-depth systematic review of the effectiveness of chatbots in supporting and enhancing the positive results of the university. We need to understand and relate different technological standards and development methods to the acceptance, use and improved functionality of different levels of chatbots.

Our goal in this project is to create a system where the user can have normal conversations with the system. Once a user asks a question, an automatic token will be created and the user will be answered with a text message. So, our goal is to take the time and hurry to get all kinds of questions related to the university with less human effort.

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