

## **ENCHANCING COLLEGE CHAT BOT ASSISTANT FOR EDUCATION SYSTEM WITH THE HELP OF HUMAN COMPUTER INTETRACTION AND SPEECH RECOGNITION**

<sup>1</sup>Madhiya Mohiuddin, <sup>2</sup>Dr. T. Ravi

<sup>1</sup>PG Scholar, M.Tech, Dept of CSE, Shadan Women's College of Engineering and Technology, Hyderabad, TS.  
madihamohiuddin17@gmail.com

<sup>2</sup>Professor, Dept of CSE, Shadan Women's College of Engineering and Technology, Hyderabad, TS.

### **ABSTRACT**

In this endeavor Chat bots are the master frameworks that comprehends and reacts to the question asked by clients in their own language. Visit bot reacts in discussion especially like the way that a human associate with each other. It functions as a far-off aide and it's not completely set in stone by observing association between client's questions and answers given by visit bots. Executed Chat bot gives two modes like text mode and sound mode for better client experience. In sound mode it works with a natural way to deal with answering through voice messages. During Institute's Academic Admission system there is a colossal line at the enquiry window. Circumstance is significantly harder for the guardians who abide in various metropolitan areas, states, and nations.

Talk bots is used to perform errands, for instance, quickly responding to clients, enlightening them and supporting client's inquiries. Talk bots can be used by any College and Universities on their site so outside partners can ask their inquiries at whatever point. The goal of this system is to give a stage to understudy and guardians to ask inquiries and clear questions through basic English language instant messages or sound orders. Understudies and guardians will amalgamate with bot as opposed to making line at enquiry workspace to ask inquiries associated with affirmation philosophy.

### **I. INTRODUCTION**

After 12th or completion of diploma students are going to take admission to the engineering. Before taking admission, they faced many problems. Students and their parents are concerned about various queries related to admission. Students get confused when selecting a good engineering college. They are selecting colleges based on various parameters like fees, last year cutoff of admission procedure. So, some students contact me via e-mail or make phone calls. Result is an unnecessary crowd for enquiry. Admission department also faces problems solving repeated queries of students. And the college admission department required extra manpower and money to serve all the queries.

The implemented chat bot will solve queries of the users, provide information to users as they require, improve quality of service time and make customers happy by providing smart solutions. It also improves productivity by providing 24/7 service, reduces crowd at help desk and also reduces human efforts. Students can interact with chat bot on the web via laptop or smart phones. Students ask miscellaneous queries regarding admission details in natural language and both can respond to their queries with correct answers. Proposed application is accessible to customers easily and gives response to users anywhere anytime. Chat bot not only gives response but also self-learn and improve itself in order to improve the quality of service.

### **SCOPE OF THE PROJECT**

The scope of the project is designing an application which will provide information about college for a new user who don't know about the college. Simply user can ask the question to system according to that question the system will give the answer to user. By this application user can easily find where he needs to go inside the college.

### **OBJECTIVE**

The user can ask the question to system either by voice or text according to that it provide the information to the user who wants information about college. If the user is new to the college, he can able to find where different class rooms or any information about college. The main objective of our application College Chat Bot is to provide information to the user.

### **PROBLEM STATEMENT**

The implemented chatbot will solve queries of the users, provide information to users as they require, improve quality of service time and make customers happy by providing smart solutions. It also improves productivity by providing 24/7 service, reduces crowd at help desk and also reduces human efforts. Students can interact with chatbot on the web via laptop or smartphones. Students ask miscellaneous queries regarding admission details in natural language and both can respond to their queries with correct answers. Proposed application is accessible to customers easily and gives response to users anywhere anytime.

## EXISTING SYSTEM

Students and their parents are concerned about various queries related to admission. Students get confused when selecting a good engineering college. They are selecting colleges based on various parameters like fees, last year cutoff of admission procedure. So, some students contact me via e-mail or make phone calls. Result is an unnecessary crowd for enquiry. Admission department also faces problems solving repeated queries of students. And the college admission department required extra manpower and money to serve all the queries.

## II. LITERATURE SURVEY

"Professional chat application based on natural language processing.

There has been an emerging trend of a vast number of chat applications which are present in the recent years to help people to connect with each other across different mediums, like Hike, WhatsApp, Telegram, etc. The proposed network-based android chat application used for chatting purpose with remote clients or users connected to the internet, and it will not let the user send inappropriate messages. This paper proposes the mechanism of creating professional chat application that will not permit the user to send inappropriate or improper messages to the participants by incorporating base level implementation of natural language processing (NLP). Before sending the messages to the user, the typed message evaluated to find any inappropriate terms in the message that may include vulgar words, etc., using natural language processing. The user can build an own dictionary which contains vulgar or irrelevant terms. After pre-processing steps of removal of punctuations, numbers, conversion of text to lower case and NLP concepts of removing stop words, stemming, tokenization, named entity recognition and parts of speech tagging, it gives keywords from the user typed message. These derived keywords compared with the terms in the dictionary to analyze the sentiment of the message. If the context of the message is negative, then the user not permitted to send the message

Real world smart chatbot for customer care using software as service (SaaS) architecture.

It's being very important to listen to social media streams whether it's Twitter, Facebook, Messenger, LinkedIn, email or even company own application. As many customers may be using this streams to reach out to company because they need help. The company have setup social marketing team to monitor this stream. But due to huge volumes of users it's very difficult to analyses each and every social message and take a relevant action to solve users' grievances, which lead to many unsatisfied customers or may even lose a customer. This papers proposes a system architecture

which will try to overcome the above shortcoming by analyzing messages of each ejabberd users to check whether it's actionable or not. If it's actionable then an automated Chatbot will initiates conversation with that user and help the user to resolve the issue by providing a human way interactions using LUIS and cognitive services. To provide a highly robust, scalable and extensible architecture, this system is implemented on AWS public cloud.[7]

An Overview of Artificial Intelligence Based Chatbots and An Example Chatbot Application.

Chatbot can be described as software that can chat with people using artificial intelligence. These software are used to perform tasks such as quickly responding to users, informing them, helping to purchase products and providing better service to customers. In this paper, we present the general working principle and the basic concepts of artificial intelligence based chatbots and related concepts as well as their applications in various sectors such as telecommunication, banking, health, customer call centers and e-commerce. Additionally, the results of an example chatbot for donation service developed for telecommunication service provider are presented using the proposed architecture.

Intelligent travel chatbot for predictive recommendation in echo platform

Chatbot is a computer application that interacts with users using natural language in a similar way to imitate a human travel agent. A successful implementation of a chatbot system can analyze user preferences and predict collective intelligence. In most cases, it can provide better user-centric recommendations. Hence, the chatbot is becoming an integral part of the future consumer services. This paper is an implementation of an intelligent chatbot system in travel domain on Echo platform which would gather user preferences and model collective user knowledge base and recommend using the Restricted Boltzmann Machine (RBM) with Collaborative Filtering. With this chatbot based on DNN, we can improve human to machine interaction in the travel domain

Chatbot Using a Knowledge in Database Human-to-Machine Conversation Modeling

A chatterbot or chatbot aims to make a conversation between both human and machine. The machine has been embedded knowledge to identify the sentences and making a decision itself as response to answer a question. The response principle is matching the input sentence from user. From input sentence, it will be scored to get the similarity of sentences, the higher score obtained the more similar of reference sentences. The sentence similarity calculation in this paper using bigram which divides input sentence as two letters of input sentence. The knowledge of chatbot is stored in the database. The chatbot consists of core and interface that is accessing that core in relational database

management systems (RDBMS). The database has been employed as knowledge storage and interpreter has been employed as stored programs of function and procedure sets for pattern-matching requirement. The interface is standalone which has been built using programming language of Pascal and Java.

**III. PROPOSED METHODOLOGY**

The implemented chatbot will solve queries of the users, provide information to users as they require, improve quality of service time and make customers happy by providing smart solutions. It also improves productivity by providing 24/7 service, reduces crowd at help desk and also reduces human efforts.

1. Keyboard Interface
2. Card Interface
3. Speech Recognition
4. Voice Commands

**Keyboard Interface**

User interface design (UI) is the design of user interfaces for BOT so that user usability can be maximized as well as user experience. Making user’s interaction simple and efficient is the goal of user interface design. User can ask queries by giving text input through keyboard. User type their query in the provided textbox and hit submit button to submit query to BOT.

**Card Interface**

With the help of card interface user can give input to the BOT by selecting values of the cards. Card interface provide option to the user to select particular card and submit query.

**Speech Recognition**

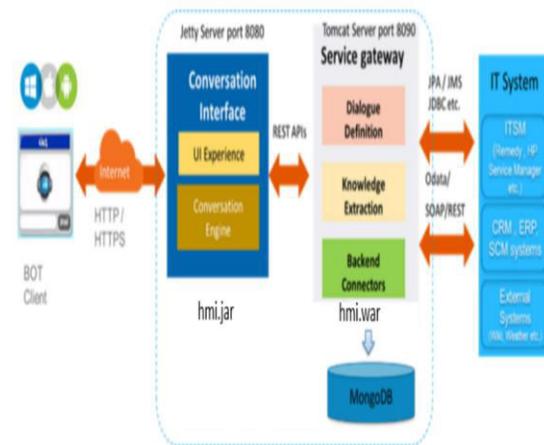
Speech recognition gives BOT ability to recognize words and sentences in spoken language and convert them to a machine-readable format. Speech recognition is used when user gives input through microphone of system, such as voice commands (e.g., "What is address of college") as shown in figure 4. The bot reply query by providing address of location. Figure 5 is a snippet of a query of a user enquiring about courses and intake. In General, a variety of course are offered by a college so bot provides card interface to user to avoid the ambiguity of fees of different courses. After that user can provide extra inputs by selected course type and department from dropdown option to or by typing message to bot. This is a transactional type of question where bot require more information to reply back to the user. Therefore, bot provide a card interface for more user details. So, Chabot is offering to choose a type of course.

**Voice Commands**

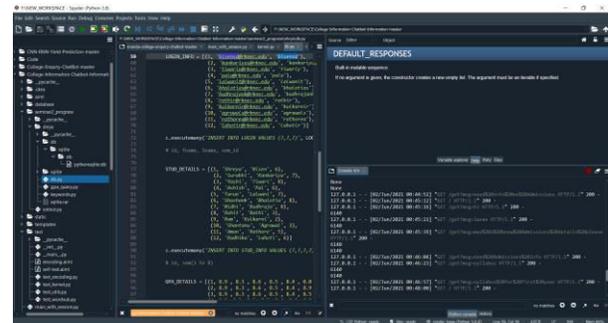
1) Manual Mode: In manual mode user will have to interact with BOT for every voice command. User will input a command the BOT gives reply and stops. Again, if the user wants to ask new question, he should again press the voice command button.

2) Auto Mode: Auto mode is like a real conversation UI. When auto mode is on user can have a back-to back conversation with BOT like he is talking to a real human being. The BOT uses Text-to-speech to answer the question through speakers. As shown in figure 6, user is trying to interact with bot with speech command mode so voice option is highlighted in output screen shot. User will ask question and speech recognition model of Chabot will try to extract information via audio received from users.

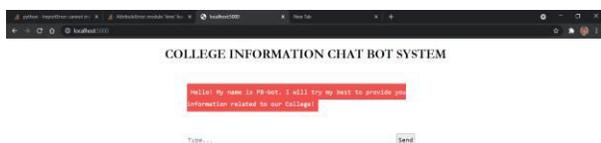
**SYSTEM ARCHITECTURE**



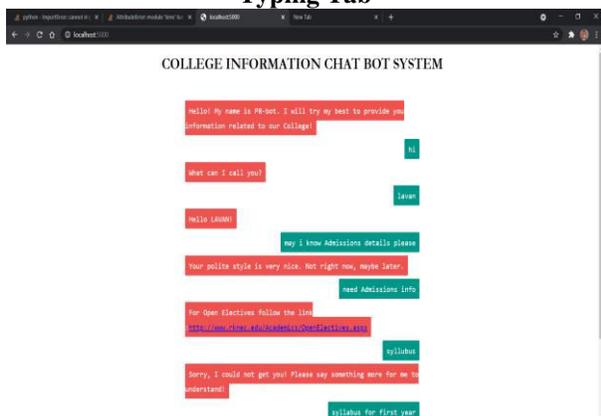
**IV. RESULTS**



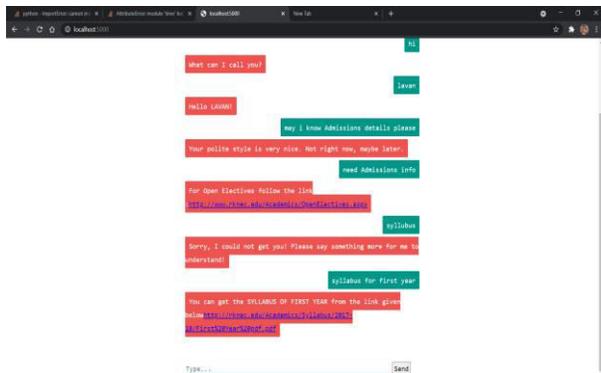
**Default Responses**



**Typing Tab**



**Conversational Query**



**Conversational Query Continuation**



**Registered Details for Queries**

**APPLICATION**

- Retail and e-commerce.
- Travel and hospitality.

- Banking, finance, and fintech.
- Healthcare.
- Media and entertainment.
- Education.

**V. CONCLUSION**

Chat bot can be used by any College and Universities on their website so that external stakeholders can ask their queries anytime. And it would be very much effective to simplify the admission process as well as this chatbot is not only providing college information but also able to answer queries related to state wise cut off, Categories wise off, gender specific cut offs and shift wise cut offs. User can provide the feedback by pressing like and dislike buttons based on the replied received to their query. This data is stored in backend and can be viewed by Administrator for analysing the type of questions asked and improvement of answer if required. To check the accuracy of chatbot, same query has been asked in different form by changing the wordings of sentences and appending various especial characters and irrelevant words.

**FUTURE ENHANCEMENT**

Chat bots are ever green area of research of interest in field of computer science. Bots still sometimes cannot understand what is asked if there are any glitches in input due to human spoken language, like a grammar error or a context error.

Misinterpretation of any commands may be because of misspelling can be further improved with the help of Powerful Natural Language Processing [NLP] techniques. Improvement can be done till the BOT passed Turing test.

Accuracy of BOT for recognizing a particular query for different contexts in which user of asking can be improved, so that the User can get a more realistic feel like talking to a real counselling person. At later stages this bot can be implemented in local language and multilingual as well.

**REFERENCES**

[1] S. Karthick, R. J. Victor, S. Manikandan and B. Goswami, "Professional chat application based on natural language processing," *2018 IEEE International Conference on Current Trends in Advanced Computing (ICCTAC)*, Bangalore, 2018, pp. 1-4.

[2] Bayu Setiaji; Ferry Wahyu Wibowo "Chatbot Using a Knowledge in Database: Human-to-Machine Conversation Modelling." In *IEEE 2016 7th International Conference on Intelligent Systems, Modelling and Simulation (ISMS)* DOI: 10.1109/ISMS.2016.53

[3] Naz Albayrak; "An overview of artificial intelligence based chatbots and an example chatbot application." In *IEEE 2018 26th Signal Processing and*

- Communications Applications Conference (SIU), DOI: 10.1109/SIU.2018.8404430
- [4] Chaitrali S. Kulkarni, et. al. "BANK CHAT BOT – An Intelligent Assistant System Using NLP and Machine Learning." In International research Journal of Engineering and Technology (IRJET) e: ISSN:2395-0056
- [5] Dungeon Lee, Kyo-Joong Oh, Ho-Jin Choi. "The ChatBot Feels You: "A Counselling Service Using Emotional Response Generation." In 2017 IEEE International Conference on Big Data and Smart Computing (BigComp), DOI: 10.1109/BIGCOMP.2017.7881752.
- [6] A. Argal, S. Gupta, A. Modi, P. Pandey, S. Shim and C. Choo, "Intelligent travel chatbot for predictive recommendation in echo platform," *2018 IEEE 8th Annual Computing and Communication Workshop and Conference (CCWC)*, Las Vegas, NV, 2018, pp. 176-183.
- [7] Borah B., Pathak D., Sarmah P., Som B., Nandi S. (2019) Survey of Textbased Chatbot in Perspective of Recent Technologies. In: Mandal J., Mukhopadhyay S., Dutta P., Dasgupta K. (eds) Computational Intelligence, Communications, and Business Analytics. CICBA 2018. Communications in Computer and Information Science, vol 1031. Springer, Singapore
- [8] A M Rahman; Abdullah Al Mamun, et .al," Programming challenges of chatbot: Current and future prospective." 2017 IEEE Region 10 Humanitarian Technology Conference (R10-HTC)
- [9] Ashay Argal ,et .al " Intelligent travel chat bot for predictive recommendation in echo platform." In 2018 IEEE 8th Annual Computing and Communication Workshop and Conference (CCWC).
- [10] Guruswami Hiremath, et.al," Chatbot for education system." In International Journal of Advance Research, Ideas and Innovations in Technology, ISSN: 2454-132X.
- [11] Milla T Mutiwokuziva, et .al " A neural-network based chatbot ." In 2017 2nd International Conference on Communication and Electronics Systems (ICCES).
- [12] Godson Michael D'silva, et .al " Real world smart chatbot for customer care using a software as a service (SaaS) architecture." In 2017 International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud) (I-SMAC).
- [13]"Most popular mobile messaging apps worldwide as of January 2017 b." in Most popular messaging apps 2017 | Statista, 2017.
- [14] Section 66A: Do not send offensive messages-The Internet Democracy Project, 2017.
- [15] S. Avasarala, AN ANALYSIS OF VALIDITY OF SECTION 66A OF IT ACT 2000 IN SHREYA SINGHAL V. UNION OF INDIA, 2015.
- [16] How not to get arrested under 66A for your online chatter I, 2014.
- [17] S. Mhaiske, Abusive Chat, 2017.
- [18] Man arrested for sending lewd SMS to lady prof denied bail, 2015.
- [19] Sending vulgar messages photographs amount to outraging modesty: HC-Times of India, 2014.
- [20] Engineer arrested for sending obscene picture to woman 1 Latest News & Updates at Daily News & Analysis, 2014.
- [21] S. Karthick and S. Binu, "Android Security Issues and Solutions", International Conference on Innovative Mechanisms for Industry Applications (ICIMIA-IEEE), pp. 686-689, 2017.
- [22] S. Karthick and S. Binu, "Static Analysis tool for Identification of Permission Misuse by Android Applications", International Journal of Applied Engineering Research, vol. 12, no. 24, pp. 15169-178, 2017.
- [23] Er. Kavindra Singh, "Enhanced Education Chat Application based on Interested Keyword with Username and Password Authentication Security", International Journal of Advanced Research in Computer Science and Software Engineering, vol. 6, no. 6, 2017.
- [24] Nikita Mahajan, "Design of Chatting Application Based on Android Bluetooth", International Journal of Computer Science and Mobile Computing, vol. 3, no. 3, 2017.
- [25] G. Satrya, P. Daely and S. Shin, "Android forensics analysis: Private chat on social messenger", 2016 Eighth International Conference on Ubiquitous and Future Networks (ICUFN), 2016.
- [26] J. Shi, D. Mowery, M. Zhang, J. Sanders, W. Chapman and L. Gawron, "Extracting Intrauterine Device Usage from Clinical Texts Using Natural Language Processing", 2017 IEEE International Conference on Healthcare Informatics (ICHI), 2017.
- [27] V. Di Lecce, M. Calabrese, D. Soldo and A. Quarto, "Dialogue-oriented interface for linguistic human-computer interaction: A chat-based application", 2010 IEEE International Conference on Virtual Environments Human-Computer Interfaces and Measurement Systems, 2010.
- [28] E. Forsythand and C. Martell, "Lexical and Discourse Analysis of Online Chat Dialog", International Conference on Semantic Computing (ICSC 2007), 2007.
- [29] User Based Security 1 Firebase Realtime Database 1 Firebase, 2017.
- [30] Learn to Secure Files 1 Firebase, 2017.
- [31] What is MD5?-Definition from WhatIs. com, 2017.