

# REVIEW ON CHATBOT

Mrs. Nidhi Sharma\*<sup>1</sup>, Gayatri<sup>2</sup>

<sup>1</sup>Assistant Professor, Dept. Computer Science & Engineering, Delhi Technical Campus, Greater Noida, India

<sup>2</sup>Bachelor of Technology, Computer Science & Engineering, Delhi Technical Campus, Greater Noida, India.

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**Abstract** – Chatbot (College Enquiry ChatBot) using Artificial Intelligence to user provide college information. This could be a text based (typed) conversation, even a non-verbal conversation. Its Web application is for College student and parents. Easy way to interaction and time consuming.

**Key Words:** ChatBot, Python, NLP, Artificial Intelligence, Pattern Matching.

## 1. INTRODUCTION

Chatbot is often described as website which will chat with people using AI. It is used to perform tasks like quickly responding to the parents as well as students. As Humans can only serve a limited number of scholars at an equivalent time. This restriction doesn't exist for chat bots, and they can manage all necessary queries simultaneously. That's why Chat bots are being made to ease the thanks to getting information instead of facing variety of problem.

Basically, College Enquiry Chat Bot provide the information regarding fee structure of the different-different courses (like B.Tech, BCA.), also providing the facilities' of the college, its provide the students information for the student like as their Semester marks, Number of Backlogs, Due Fees.

By using Artificial Intelligence to user provide college information. This could be a text based (typed) conversation, even a non-verbal conversation. Its Web application is for College student and parents. Easy way to interaction and time consuming.

The main motive of the project is to reduce the work load on the college's office staff and reduce the response time to a user's query.

As students and parents, we require many sorts of data regarding college and university during / taking admission in the course. Sometimes getting this information is quite cumbersome and lengthy. Like getting information regarding college fees structure or the due fees remaining may be a very

lengthy process we've to travel to administration building and find the right window then look for a no dues form then fill it with correct data then submit it to the acceptable person then that person will tell us our due fees.

And also for hectic parents for knowing the fee structure of the college, eligibility criteria to taking an admission etc. They find the help desk of the college and then fill the enquiry form and then submit it. The help desk response the query and solve it. This process is too hectic for parents because a few information they travel a lots of Kilometers and get that information.

## 2. PROPOSED MODEL

College Enquiry Chat Bot provide the information regarding fee structure of the different-different courses (like B.Tech, BCA.), also providing the facilities' of the college, its provide the students information for the student like as their Semester marks, Number of Backlogs, Due Fees.

By using Artificial Intelligence to user provide college information. This could be a text based (typed) conversation, even a non-verbal conversation.

It is web-based site. It has three modules - Front end ChatBot, Back end is admin login. And the response in the Text format.

## MODULE

1. ADMIN LOGIN
2. CHAT BOT
3. TEXT

## Natural Language Processing

Natural Language Processing (NLP) is the study of letting computers understands human languages [9]. To use artificial intelligence to simplify the everyday life of the modern world. [10]

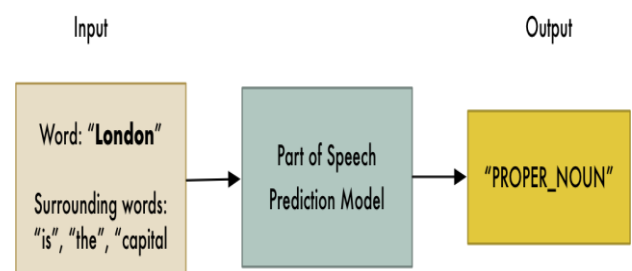


Fig- 1: Predicting Parts of Speech for Each Token [14]

**Pattern Matching**

Pattern matching requires a lot of pre generated patterns. Based on these pre-generated patterns the chatbot can easily pick the pattern which best matches the customer query and provide an answer for it.[11]

Pattern Matching can be used in Identification as well as in Pre-Classification Processing, Page Processing, or Storage Processing. [12]

Text : A A B A A C A A D A A B A A B A

Pattern : A A B A

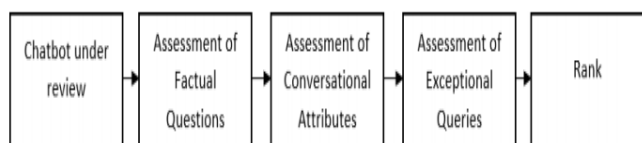


Pattern Found at 0, 9 and 12

**Fig-2:** Pattern Searching [15]

**3. LITERATURE SURVEY**

In 2020, 3rd INTERNATIONAL CONFERENCE ON INNOVATIVE COMPUTING AND COMMUNICATION - COMPARATIVE ANALYSIS OF CHATBOTS Shivang Verma, Lakshay Sahni, Moolchand Sharma, Department of Computer Science and Engineering, Maharaja Agrasen Institute of Technology, GGSIPU, Delhi, India, Department of Electrical and Electronics Engineering, Delhi Technological University, Delhi, India. In this paper, we are analyzing and comparing the total accuracy score of the following chat bots: Rose, Google Assistant, Siri, Machine Comprehension Chatbot, Mitsuku, Jabber wacky, ALICE and Eliza based on the answers provided by them to a set of predefined questions. [7]



**Fig-3:** Block diagram of the methodology. [7]

**Table- 1:** Sets of Questions [7]

Assessment of Factual Questions			
S. No.	Question	Answer	Rank
1.	What is your name?		
2.	Tell me about yourself.		
3.	Where are you from?		
4.	Where were you born?		
5.	How old are you?		
Sum			
Average			
Assessment of Conversational Attributes:			
S. No.	Question	Answer	Rank
1.	Name three things you want to recommend to me.		
2.	How are you?	I am also good.	
3.	How is the weather today?	Do you like sunny?	
4.	What are you doing?	No, like what are you doing right now.	
5.	Do you like dancing?	What kind of music?	
Sum			
Average			
Assessment of Exceptional Queries			
i. Typing Error:			
S. No.	Question	Answer	Rank
1.	Waht is yur name?		
2.	Suggests me three cool thins.		
ii. Dialogue Errors:			
Acceptability of a question from wrong grammar			
S. No.	Question	Answer	Rank
1.	Do you like two dance?		
2.	Do you liking to driving?		
iii. Humiliation & Insults			
3.	You are dumb.		
Sum			
Average			

**Table- 2:** Assessment of Factual Questions [7]

Parameter	Rose	Jabberwacky	Google Assistant	Mitsuku	Siri	Eliza	A.L.I.C.E.	MC Bot
Que1	1	1	1	1	1	2	1	1
Que2	2	2	1	1	1	3	1	2
Que3	1	2	1	1	1	3	1	1
Que4	1	3	2	1	1	4	1	1
Que5	1	3	2	1	2	4	1	1
Sum	6	11	7	5	6	16	5	6
Average	1.2	2.2	1.4	1	1.2	3.2	1	1.2

**Table- 3:** Assessment of Conversational Attributes [7]

Parameter	Rose	Jabberwacky	Google Assistant	Mitsuku	Siri	Eliza	A.L.I.C.E.	MC Bot
Capacity to comprehend complex client input	2	2	1	1	1.4	4	2.6	2.4
Capability of Chatbot to start new topics	1.5	1.75	1	1	1.25	3.75	2.5	2
Input/output Voice Features	2	2	1	2	1	3	2	1
Ability to access Chat history	2	3	2	1	2	4	4	4
Sum	7.5	8.75	5	5	5.65	14.75	11.1	9.4
Average	1.88	2.188	1.25	1.25	1.412	3.68	2.78	2.35

**Table- 4:** Assessment of Exceptional Queries [7]

Parameter	Rose	Jabberwacky	Google Assistant	Mitsuku	Siri	Eliza	A.L.I.C.E.	MC Bot
Capacity to answer unfamiliar inquiries	2.6	2.2	1.4	1.2	1.6	3.8	2	3.4
Overcoming Typos and Incorrect Grammar	2.5	2.25	1.5	1.25	1.75	4	2.25	3.25
Responding appropriately to offensive sentences	3	2	1	1	1	3	1	4
Sum	8.1	6.45	3.9	3.45	4.35	10.8	5.25	10.65
Average	2.7	2.15	1.3	1.15	1.45	3.6	1.75	3.55

**Table-5:** Final Outcome [7]

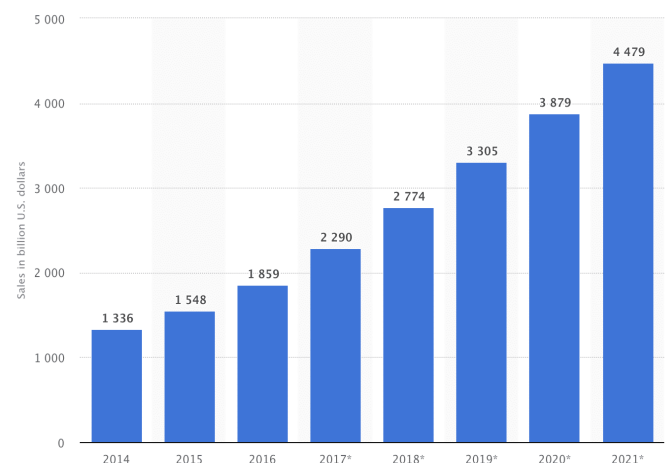
Parameter	Rose	Jabberwacky	Google Assistant	Mitsuku	Siri	Eliza	A.L.I.C.E.	MC Bot
Table I	1.2	2.2	1.4	1	1.2	3.2	1	1.2
Table II	1.88	2.188	1.25	1.25	1.412	3.68	2.78	2.35
Table III	2.7	2.15	1.3	1.15	1.45	3.6	1.75	3.55
Sum	5.78	6.538	3.95	3.4	4.062	10.48	5.53	7.1
Average	1.92	2.179	1.316	1.13	1.354	3.49	1.84	2.36
Rank	5	6	2	1	3	8	4	7

In April 2020, International Journal of Mechanical Engineering and Robotics Research - An Overview of Machine Learning in Chatbots; Prissadang Suta, Pornchai Mongkolnam and Jonathan H. Chan( School of Information Technology, King Mongkut’s University of Technology Thonburi, Bangkok, Thailand), Xi Lan, Biting Wu(Division of Engineering Science, University of Toronto, Ontario, Canada).

The research findings suggest that chatbots operate in three steps: understanding the natural language input; generating an automatic, relevant response; and, constructing realistic and fluent natural language responses. The current bottleneck in designing artificially intelligent chat bots lies in the industry’s lack of natural language processing capabilities. Without the ability to properly understand the content and context of a user’s input, the chatbot cannot generate a relevant response. [5]

**Table-6:** MESSAGING PLATFORMS FEATURES COMPARISON [5]

Features / Platforms	Facebook	Skype	Slack	Tele-gram	MS Teams	Viber
Text message	✓	✓	✓	✓	✓	✓
Carousel	✓	✓	✓	Partial	✓	✓
Button	✓	✓	✓	✓	✓	✓
Quick reply	✓	✗	✗	✗	✗	✗
Web view	✓	✗	✗	✗	✗	✗
Group chatbot	✓	✗	✓	✓	✗	✗
List	✓	✓	✗	✗	✗	✗
Audio	✓	✓	✗	✓	✓	✓
Video	✓	✓	✗	✓	✗	✓
GIF	✓	✓	✓	✓	✓	✓
Image	✓	✓	✓	✓	✓	✓
Document/file	✓	✓	✗	✓	✓	✓

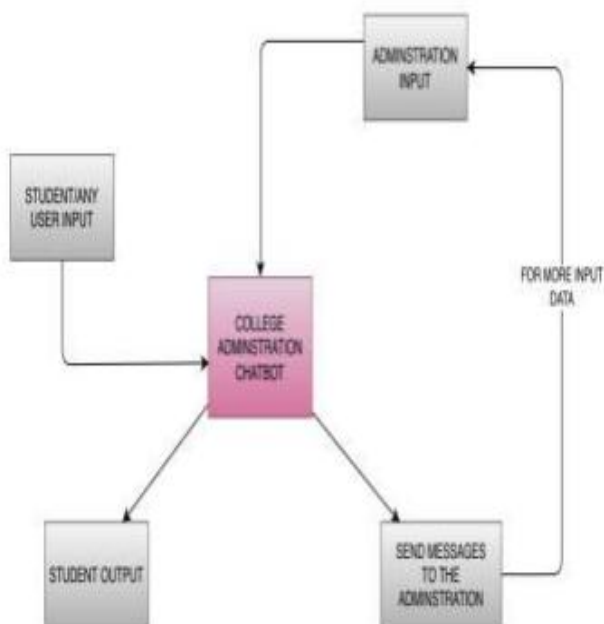


**Fig-4:** Retail e-commerce sales worldwide from 2014 to 2021 (in billion USD)

However, existing chatbots have a few limitations. The main challenge for a chatbot right now is understanding the

context in a conversation and generating a relevant response. Hence, future intelligent chatbots should: 1) implement improved natural language processing techniques to accurately recognize the content of the user input; 2) learn to understand the context of conversations and respond accordingly with emotions or personalized content. The ultimate goal of chatbots is to replicate human-human interaction, which requires improved machine learning and natural language processing techniques. [5]

**In March 2020**, IRJET - COLLEGE ENQUIRY CHATBOT Ms.Ch.Lavanya Susanna, R.Pratyusha, P.Swathi, P.Rishi Krishna, V.Sai Pradeep; Assistant Professor, Dept of CSE, Dhanekula Institute of Engineering and Technology, Andhra Pradesh, India; Bachelor of Technology, Computer Science and Technology, Dhanekula Institute of Engineering and Technology, Andhra Pradesh, India. This project used a software which can be made up using codeigniter php framework and can help user to talk with machine. [6]

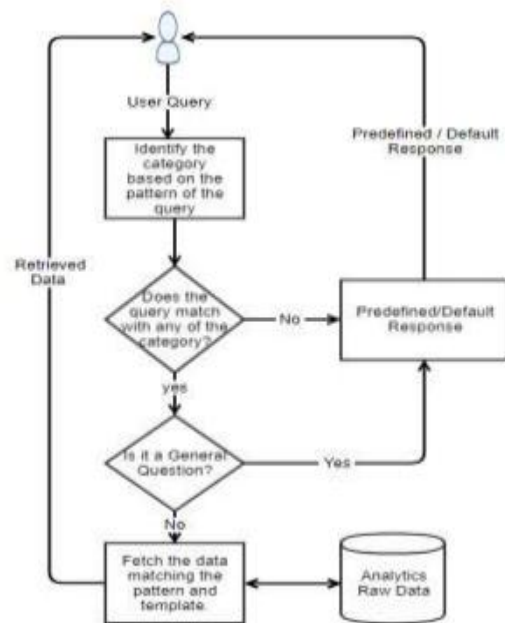


**Fig-5:** Block Diagram of College Enquiry ChatBot

**In Nov 2019**, IRJET- CHATBOT IN PYTHON Akshay Kumar, Pankaj Kumar Meena, Debiprasanna Panda, Ms. Sangeetha, UG Student, Dept. of Information Technology, SRMIST, Chennai-600089 4Assistant Professor, Dept. of Information Technology, SRMIST, Chennai-600089. This project is based on Python to develop a web API. The web API is worked with Pattern Matching, AIML, Latent Semantic Analysis (LSA) and Natural Language Processing (NLP).

AIML and LSA are used for creating chatbots. Artificial Intelligence Markup Language (AIML) and Latent Semantic Analysis (LSA) are used for developing chatbots, which are

used to define general pattern-based queries. This pattern can also be used to give random responses for the same query in the chatbot. LSA is a Latent Semantic Analysis technology in python, which is utilized to discover likenesses between words as vector representation. So that the unanswered queries by AIML will be viewed as a reply by LSA.[4]



**Fig-6:** Flow Chart

**In March 2019**, International Journal of Engineering Science and Computing - A Review on College Enquiry Chatbot By Jayesh Gangrade, Surinder Singh Surme, Sumant Somu, Shubham Raskonda, Poonam Gupta, Department of Computer G.H. Rasoni College of Engineering and Management, Pune, India. That project is an Android Application it's provide like grades of the student. That project has not response a unmatched keywords.

Artificial intelligence will be used to answer the student's queries.[3] The answers will be give using the built in artificial intelligence algorithms.[3] Algorithm will be used to match the keywords from the knowledge base in some cases user may find out that the answer given to his/her query is not relevant. [3]

**In April 2018**, IJIRSET – A Web Based College Enquiry Chatbot with Results By Sagar Pawar, Omkar Rane, Ojas Wankhade, Pradnya Mehta Department of Computer Engineering, MMCOE, Pune, India. That project is web based application has provide answer query is very efficiently. It also provide to the user to ask the tuition or private coaching enquiry to the classes, patient of the hospital to collect information like available Doctors. It is basically

provide a college's important notice, activities to the student in the form of Text document or PDF format.

The system will use bigram and sentence similarity algorithms to give appropriate answers to the user. [1] Use of SQL is made for handling the database. The input query undergoes tokenization, bigram and sentence similarity score phases discussed in the following section. [1]

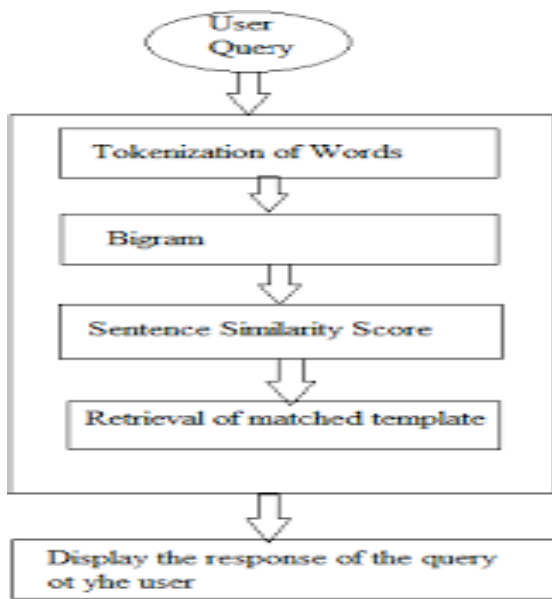


Fig-7: System Architecture of Chabot

In March 2018, Journal for Research – Chatbot for College Related Queries By Mr. Sathis Kumar .T, N. Vijay Kumar, R. R. Vinodh, T. Vivekananthan, U. Vinoth Kumar. In this project they are developed a web based application by using DataMining (Process of data- DWH; Level of data mining-ETL; Different level of Analysis- Artificial neural networks, Decision Trees, Nearest Neighbor Method) and Clustering. It provide user to chat any type of format. This system is trained by the dataset and also trained when come a new question query and answer them. This system is provide a College's activities such as date and time like annual day, sport day and other activities.

They generate new responses from scratch. Generative models are typically based on Machine Translation techniques, but instead of identify the synthetic similarity for entered Keyword. [2]

An intelligent question answering system has been developed using the Naïve Bayesian concept.[2]

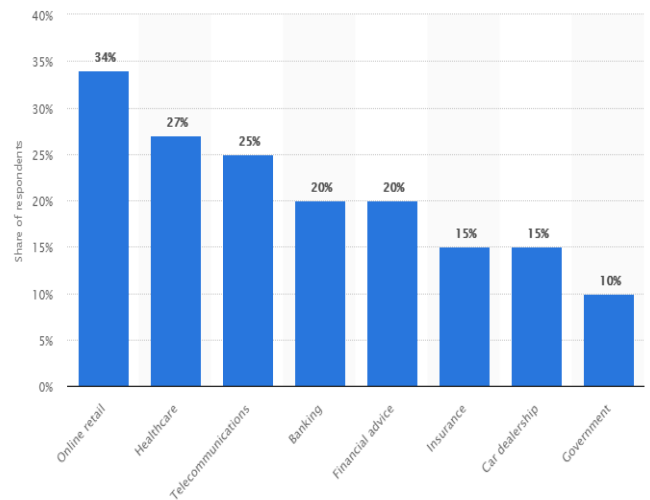


Fig-8: In Chatbot Report 2018: Global Trends and Analysis.

#### 4. CONCLUSIONS

Our ChatBot provides information regarding to the college. It is the website. It is interact to the user like parents, student. By using NLP human language transformed into a data language. And also by using the Pattern Matching, Enquiry related question respond quickly.

When Chat Bot technology is integrated with popular web services it can be utilized securely by an even larger audience. [13]

#### 5. ADVANTAGES

- User does not have to go personally to college office for the enquiry.
- This application saves time for the student as well as parents.

#### 6. DISADVANTAGE

- ▶ If someone mis-spelled it, then it doesn't respond.

#### 7. APPLICATION

1. Healthcare like ArogyaSetu App.
2. Travel
3. Education
4. Financial
5. Entertainment

#### 8. PROBLEM STATEMENT

- ▶ If someone mis-spelled it, then it doesn't respond.
- ▶ To extract information from an organization.



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