iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 8 **Issue:** IX **Month of publication:** September 2020

DOI: https://doi.org/10.22214/ijraset.2020.31768

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 8 Issue IX Sep 2020- Available at www.ijraset.com

EduB: Education based Interactive System

Prasanna Babu[1], Disha R[2], Shamasundar[3], Srikant Kashyap B S[4], Yashaswini H M[5]
[1, 2, 3, 4]*B.E Student,* [2]*Assistant Professor, Department of Information Science & Engineering, BNM Institute of Technology, Banashankari Stage II, Bengaluru, Karnataka-560070*

Abstract: ***The process of searching for a desired college consists of gathering necessary information about numerous colleges. We need to do a detailed search based on our Common Entrance Test ranking, caste, category, marks, ranks cut-off, facilities like campus placement, curricular activities, sports etc. The information can be relied from online, visiting the different colleges or by the knowledge of our parents and relatives. It is a tedious process to search in online about various colleges or visit each of them. These problems are mostly faced by rural area students where there is lack of sufficient information about the possible colleges they are eligible for. In order to automate and make this process user-friendly chat-bots can be used which will answer any question related to the education system. Chat bots usually provide a text-based user interface, allows the user to type the commands and receive text and text to speech response. Chat-bots replace human interaction using advanced artificial intelligence and machine learning technology. It can now be useful to students to decide on the colleges just by a click away. The students can ask the queries regarding the colleges. The Chatbot has the capacity to make friendly conversations, respond the course, cutoff, location, placement information, intake, fee and facilities provided by each college.***
Keywords: Artificial Intelligence; Machine Learning; ChatBot; SGD.

I. INTRODUCTION

The project titled "EduB" is an education based interactive model. In today's world people are living a change moment in how customers and companies interact with each other. The emergence of new technology and the pervasiveness of the internet provide opportunities for new forms of interactions between customers and service providers. One of these technologies is ChatBots. These are programs that mimics the human conversation using AI. ChatBots are of two types Text Based and Voice Based. Text based is often referred as ChatBots. Voice based is often called as Virtual assistants. Examples: Alexa, Siri, Google etc. These are the some of the examples where ChatBots are used.i.e,

A. Virtual Assistance
B. Entertainment purpose
C. Answering FAQ's
D. Getting driving directions
E. Turning up the thermo stat in smart home. Using natural language users will interact with the above computer programs. This technology started in the 1960's; the aim was to see if bot could fool the users that they were real humans. However, chatbot systems are not only built to mimic human conversation, and entertain users it also helps in education, information retrieval, business, and e-commerce application. In business, chatbot can be used by multiple users at a time and customer service is also reduced. Bots are used in many organisational domains where it can replace the humans.

In current Education system, after completion of Pre-University, students need to write common entrance test. They will be ranked based on the scores obtained in the exam which will pave the way to decide the destined college. Students are rely on the knowledge of parents, friends and relatives to gather information about the specific institutions. It is not practically feasible for the institutions to fix up the real time doubt clearing assistant to assist the admission seeker. To overcome this problem, this project is designed to solve this kind of problem which common people are facing in day to day life. The chatbot is an artifical intelligent model that will be used by user for the conversation. The model interface is textbased.the user will provide a question to the model and the model will reply for the question asked by the user. The chatbot should be userfriendly for the use. The chatbot should reply for the question in less time and 100% accurate answers should be provided. The most important advantage of having a chatbot is that it is available 24/7. No matter what time it is, a user can get a query solved. EduB is designed in python, which mainly concentrates on Machine Learning Algorithms. A model is developed by training with sample datasets. The front end is developed using Tkinter where the user will input the query regarding the colleges. The query will be compared with the trained data sets. Depending upon the Query the desired and suitable answer will be provided for the users in addition we have provided with a voice response.

©IJRASET: All Rights are Reserved

II. LITERATURE SURVEY

Chatbot goal is to make the communication between human and machine such as mobile and computer. Recently a significant amount of work has been done in the area of chatbot design.

Neelkumar Patel and et.al [1] have proposed an Airtifical intelligence and web technology based human Interactive University Chatbot. The project deals with user's request in form of question based message and processes it to deliver a desired response in form of message. It solves the process of visiting colleges and gathering related information as per the needs, as it is time consuming. The project is a web-based ChatBot. Graphical User Interface (GUI) is much similar to messaging application, which provides a friendly environment to the user. Static ChatBots only involves comparing of strings, whereas Unibot uses dynamic approach like pre-processing the message before searching for a response.

Bhavika R Ranoliya and et.al [2] have proposed ChatBot for University related FAQs. In this paper the chatbot design is given. The design provides accurate and effective answer for the questions asked by the user using the dataset using Artifical Intelligence, Machine Learning and LSA (latent Semantics Analysis). The user question will be processed and pattern matching will be done with the pre-provided data.

Mariyln choque and et.al [3] have proposed Cognitive technology model to enhanced academic support services with ChatBots. A cognitive technology model to enhance academic support services with ChatBots. This proposed model also emphasizes the use of best practices for real-time data processing. It uses customer's feedback to enhance the interaction between the user and Model.

Anupam Mondaland et.al [4] have proposed An Automated Conversation System for the Education Domain. The paper focus on designing a text (interactive) communication Application for the education domain called as chatbot. The application will help the user by providing the answers for the questions asked by the user. By using ensemble learning method and random forsest method the data will be accessed from the dataset. Pratik Salve and et.al [5] have proposed College Enquiry ChatBot. The college enquiry chat bot built using AI algorithms that analyses user's gives question and understands the question given by the user. The system is a web application which answers the user question very effectively. Users have to ask their questions to the system. The system will use AI algorithms and provide a proper answer to the questions asked by the user if the system provides an invalid or wrong answer to the user then the admin can modify or delete the wrong response provided by the system to the user.

György Molnár and et.al [6] have proposed The Role of ChatBots in Education. The authors believe that education is a very important field of application for chatbots. Nowadays, students receive a significant part of their information about studies, curriculum and tasks online. Chat programs therefore provide significant help in learning and learning processes. The use of chatbots allows the sending of reminders about exams, and generative systems can even help with understanding the curriculum.

III. PROPOSED SYSTEM

In the proposed system, Architecture design and Dataflow diagram of EduB is discussed.

A. Architecture Design

An architectural design is the conceptual model which defines the behaviour, views, and structure of a system. An architecture design is the representation of the system and it is the first stage in the software design process. It describes how the system is organized as a set of communicating components. Figure 3.1 shows the architecture design of the proposed system. The system has seven modules which are Dataset Creation, User Query, Query Pre-Processing, Training the Model, Trained Dataset, Test the Model and Answer Extraction.

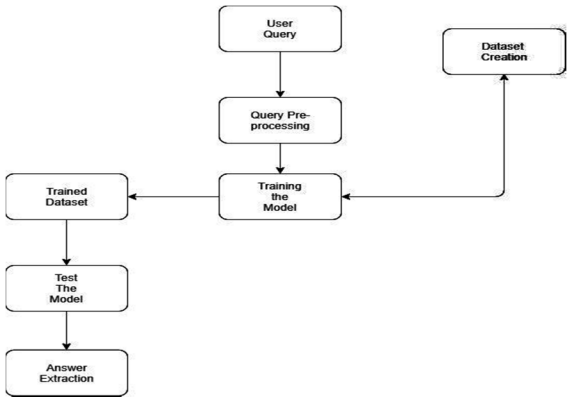


Fig 1: Architecture Design

©IJRASET: All Rights are Reserved

The above figure illustrates the overview of the system that is proposed. The first step is to create the dataset.
The creation of dataset involves the collecting the college information like location of the College, cutoff of each department in the college, fees, placement information, facilities, accreditation and their intake.

B. Dataflow Diagram

Data Flow Diagram (DFD) is a graphical representation of the flow of data through an information system. It shows how information is input to and output from the system, the sources and destinations of that information, and where that information is stored.

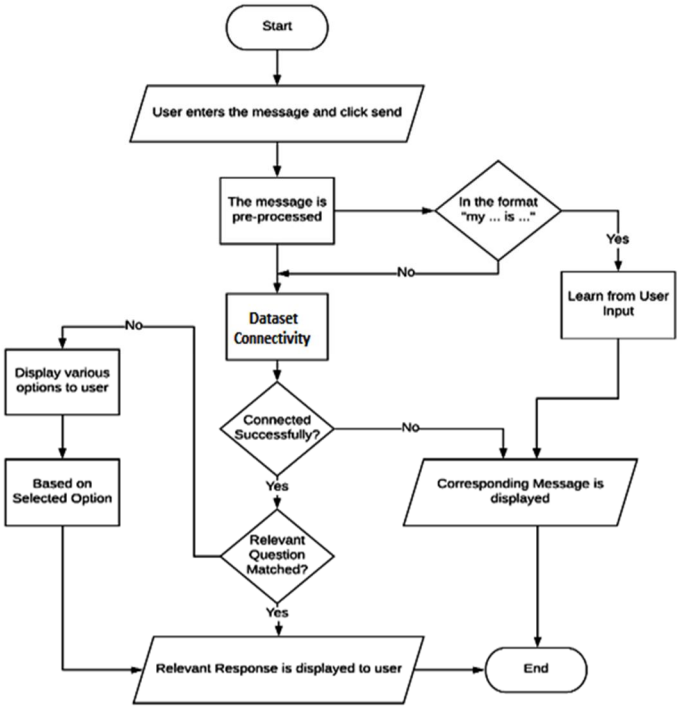


Fig 2: Data Flow Diagram

Figure 2 shows the data flow diagram for the proposed system.The flowchart of the system displays how the EduB performs. Initially, the user enters the message/question and clicks Send. The user's message is pre-processed. In the query pre-processing it performs the tokenization, stop word removal, POS tags and stemming. During this phase, it checks for the format in the predefined questions, if found successfully then it learns from the user input and displays the corresponding message to the user. If not found in the format, connectivity to dataset is obtained. If connected successfully, relevant question is matched from the set of predefined questions then relevant Response is displayed to the user. If not matched successfully, it will suggest the user to give proper information. Based on these information the appropriate response is displayed. Randomly it selects one response from the multiple responses and displayed to the user.

IV. IMPLEMENTATION

Implementation is the phase of project where the theoretical outline is transformed into a working framework. Python language is used for developing our system. NLTK, Tkinter are the tools used, IDLE, Tensorflow are the platform used.
NLTK is a leading platform for building Python programs to work with human language data. Tokenization, Stemming, Parts of Speech (POS) tagging, stop word removal and bag of words operation are performed using NLTK.
Tkinter is the standard GUI library for Python. Python when combined with Tkinter provides a fast and easy way to create GUI applications. Tkinter provides a powerful object-oriented interface to the Tk GUI toolkit.
IDLE is an integrated development environment (IDE) for Python. By default the IDLE module is installed in Python for Windows. Single statement like Python Shell can be executed by python shell. It is used to create, modify and executes the Python scripts.

©IJRASET: All Rights are Reserved

Tensorflow is a license free software for dataflow graphs to build models. It allows neural networks to go hand in hand with multi layers and is predominantly used for prediction and classification of the sample data fed into the model or the network. It provides excellent functionalities and services and enables the high level complex parallel computation for building advanced neural networks.

For training the model stochastic gradient descent algorithm is used.

Algorithm

Require: Learning rate η.

Require: Initial parameter θ.

While Stopping criterion not met do

Sample a minimatch of m examples from the training set $\{x^{(1)}, \ldots\ldots, x^{(m)}\}$

Set g=0

For i=1 to m do

Compute gradient estimate:

$g \leftarrow g + \nabla_0 L(f(x^{(i)}; \theta)), y^{(i)}; \theta)$

End for

Apply update: $\theta \leftarrow \theta - \eta g$.

End while.

In stochastic gradient descent, instead of finding the sum of the gradient of cost function of all the examples we find out the gradient of the cost function of single example. For each iteration it randomly chooses one response from the dataset.

The update rule for θ with gradient g when momentum is 0.0:

$$\theta t = \theta t-1-learning_rate*gt$$

The update rule when momentum is larger than 0.0:

$$Vt=momentum*vt-1-learning_rate*gt$$

$$\theta t= \theta t-1+vt.$$

V. RESULTS

This chapter discusses the results obtained by implementing different modules of the proposed system. It contains the snapshots of the results obtained from different modules of the system.

The figure 3 shows the snapshot of the greeting message. When the user inputs “Hi”, then EduB responds as “Hello!” The user is free to ask any general questions regarding to the EduB like “What can you do?” Then EduB responds as “I am here to clarify your queries regarding colleges”.

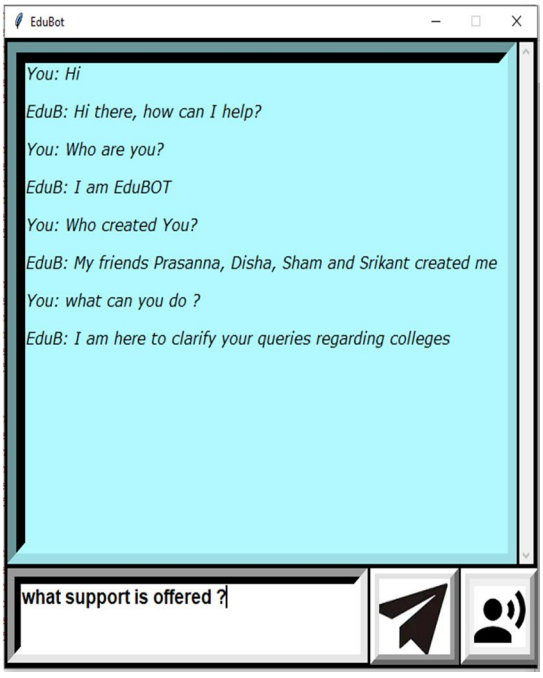


Figure 3: Greeting message

©IJRASET: All Rights are Reserved

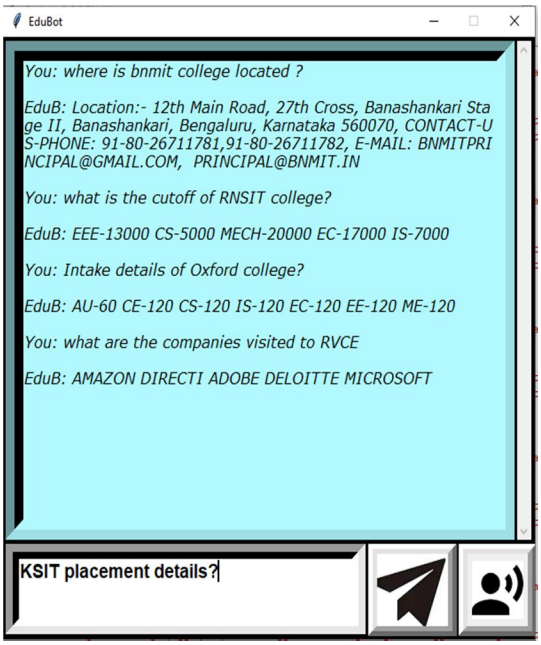


Figure 4: College Details-1

The above snapshot shows the information provided by different college. Our proposed system provide the location, cutoff, Intake and Placement information of different colleges.

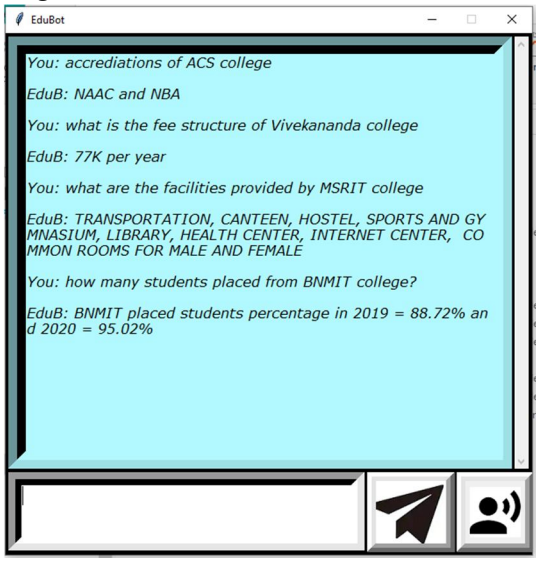


Figure 5: College Details-2

The above figure 5 shows accreditation, fee structure, No. of students placed to different companies and facilities provided by different colleges.

VI. CONCLUSION

The main objective of the system is to provide information about the colleges to the user, hence a virtual assistance called EduB is developed which will answer to the user queries about any engineering college in Bangalore. EduB can answer to any question regarding Location, cutoff, fee structure, seat matrix, placement details and facilities provided by the college. EduB is an automated system which makes this process easy. With interference of AI bots, it is possible to reduce the man-power required for this process and making the model intelligent. Reduce time consumption and user service cost. The accuracy of the developed system is 80%. Testing with various types and possible questions gave accurate results.

©IJRASET: All Rights are Reserved

VII. FUTURE ENHANCEMENT

The system can be further improved by using large dataset which consists of college information about various engineering colleges in the state. It can also be extended to other courses like medicine, Bachelor of Commerce, Bachelor of Arts or any others degree courses.

An extended version of EduB can be developed where it will predict the possible colleges when prompted for the users ranking.

REFERENCES

[1] "Patel, Neelkumar P., et al. "AI and Web-Based Human-Like Interactive University Chatbot (UNIBOT)." 2019 3rd International conference on Electronics, Communication and Aerospace Technology (ICECA). IEEE, Vol 5, pp. 755-759, 2019.

[2] Ranoliya, Bhavika R., Nidhi Raghuwanshi, and Sanjay Singh. "Chatbot for university related FAQs." 2017 International Conference on Advances in Computing, Communications and Informatics (ICACCI). IEEE, Vol 10, pp. 602-608, 2017.

[3] Choque-Díaz, Marilyn, Jimmy Armas-Aguirre, and Pedro Shiguihara-Juárez. "Cognitive technology model to enhanced academic support services with chatbots." 2018 IEEE XXV International Conference on Electronics, Electrical Engineering and Computing (INTERCON). IEEE, Vol 8, pp. 458-463, 2018.

[4] Anupam Mondaland, David Williamson, and Arthur Graesser. "An Automated Conversation System for the Education Domain" Intelligent Tutoring Systems Conference, Pittsburgh, PA. Vol 7, pp. 334-340, 2010.

[5] Prathik Salve, Vishrutha P and Ajay Pratap Singh. "College Enquiry Chatbot." International Journal of New Technology and Research 3.1, Vol 10, pp. 888-895, 2017.

[6] Molnár, György, and Zoltán Szüts. "The Role of Chatbots in Formal Education." 2018 IEEE 16th International Symposium on Intelligent Systems and Informatics (SISY). IEEE, Vol 6, pp. 557-563, 2018.

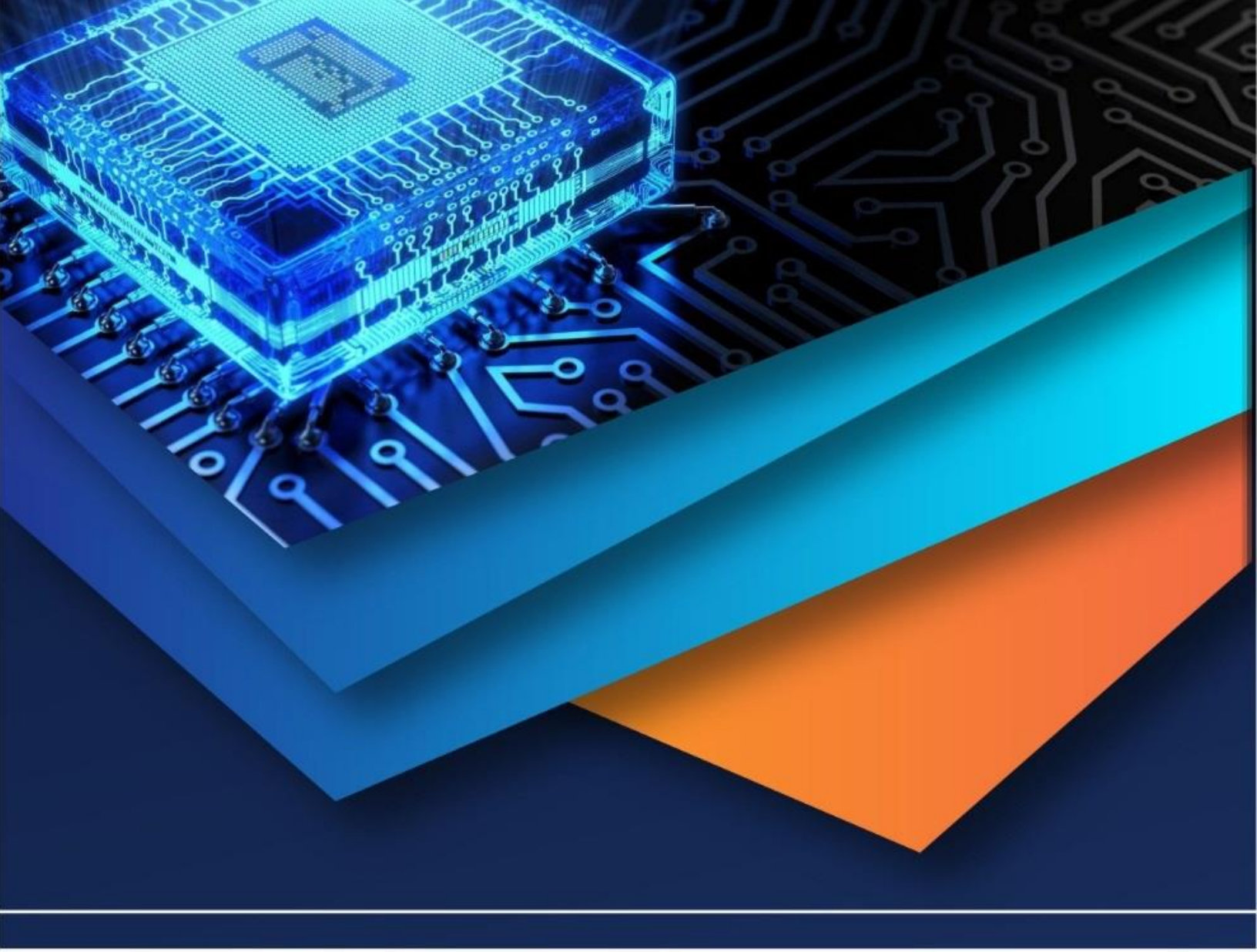
[7] Drishti Malik Vibhor Sharma, Monika Goyal, "An intelligent behaviour shown by chatbot system", International Journal of New Technology and Research, 2017.

[8] Himanshu Agarwal, Rameshwari Deshmukh, Supriya Biradar, Bhagyashri Cheke, "ChatBot Real Virtual Human", International Journal of Advanced Research in Computer and Communication Engineering 2018. EduB B.E, Dept. of ISE, BNMIT Page 50 2019-2020.

[9] Sarthak V. Doshi, Suprabha B. Pawar, Akshay G. Shelar, Shraddha S. Kulkarni, "Artificial Intelligence Chatbot in Android System using Open Source Program-O", International Journal of Advanced Research in Computer and Communication Engineering, 2017.

[10] Nitesh Thakur, Akshay Hiwrale, Sourabh Selote, Abhijeet Shinde, Prof. Namrata Mahakalkar, "Artificially Intelligent Chatbot", Department of Computer Science & Engineering, Priyadarshini Institute of Engineering & Technology, Nagpur,2018.

©IJRASET: All Rights are Reserved



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)