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Chatbot for E-Learning Using Machine Learning

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Abstract: A chatbot is a computer program that can communicate with human beings using Machine Learning in messaging platforms. Whenever a user inputs a query, it responds and it saves the input query as well as the response in its chat history which helps the chatbot with some kind of initial knowledge. As the number of responses is increased, the precision and the accuracy of the chatbot also get increased. Our project is focused on creating a chatbot that can be used by the college website. The chatbot is basically divided into two modules; The College Enquiry option on the chatbot contains all the responses related to the course details, admission related queries, faculty details, information about the college facilities and infrastructure, etc. The E-Learning option on our chatbot can respond to the questions related to different subjects of IT branch i.e. C, C++, HTML, CSS, Java-Script, JAVA, Advance JAVA and Android. It is essential because when students search for some syllabus related questions on any search engine it gives multiple answer or either tells them to redirect to another links to search for answer, thus it is effective and more accurate. The future work includes training our chatbot with more data about these subjects so that it doesn't miss any queries of user.

Keywords: E-Learning, Machine learning, Databases, Chatbot, Machine learning algorithms, Natural Language Processing, Speech Recognition, Response, Query.

I. INTRODUCTION

In addition to the internet search engines, currently many applications are introduced which are commonly known as Chatbot but the word is derived from combination of Chatter Robot, which is generally made to give an automatic reply. A chatbot is a software application that is intended for an online chat conversation via text or speech. In the recent era, the Artificial Intelligent systems are used for human activities such as decision making at particular moment, performing our day-to-day tasks. Generally, there are two types of chatbot; open domain and closed domain. Open domain Chatbots are for general use or for entertainment purpose but the close domain Chatbots are very specific to a particular domain. The work of this system is very easy because the knowledge is already provided in the database. It uses few methods to get the accurate reply from the database, that is speech recognition, natural language processing and pattern matching. The system will match the input sentence from the user with the pattern that is already existing in the knowledge base. In the field of E-Learning, the application of a chatbot as part of the education has shown interesting potential, both as teaching and administrative tool. According to the studies, recently use of chatbot in education is very less but it has more possible features. Chatbots are recently very trending thing, most of the websites are having their chatbot for better user interaction.

II. PROBLEM STATEMENT

The aim of our project is to develop an automated chatbot system for our college website which replies to a user query on behalf of a human such as admission enquiry, syllabus related doubts, etc. And main aim of this is chatbot for E-Learning purpose, which gives a reply to a user queries related to programming languages included in syllabus of IT branch. The main function of the project is to reduce manual paper work and developing system which gives a single output of a query which is accurate and learn from its previous responses.

III. ACTUAL METHODOLOGY

Requirements Used:

1) Computer (Windows 10).
2) Software services used: Google Dialogflow, Kommunicate, Xampp Server.
3) IDE: Visual Studio Code

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The idea of the proposed model AISSMS POLY-BOT is that it answers the queries of user with a single accurate answer. Simultaneously the machine should learn itself. In this proposed research work our aim is to implement the proposed approach. Also, we plan to explore the implications of voice recognition. In our proposed system we have used HTML, CSS and JavaScript and we have created a webpage where we have implemented our chatbot. We have used Google's DialogFlow to create a chatbot which has implemented Machine Learning Algorithms, that does the text classification & intent identification. We have integrated our chatbot with Kommunicate; it is live solution that enables businesses to streamline processes related to customer communications, chatbot, etc. So communicate gives interactive User Interface to our chatbot as well as we have enabled the text to speech feature from it. User communicates with the chatbot through user interface. This can be using text-based or audio based. The interface gets the query and does the pattern matching of the input with the database and fetches the most likely output.

The conversation of user and bot is backed up so that the chatbot can continue conversation later with user related to topic previously discussed. It saves the chat history and we can view this chat history at Kommunicate after logging in. This chat history can also help teachers monitor the most asked questions to the chatbot regarding a particular subject. This can aid teachers with providing better education. The chatbot will occasionally ask for user's feedback, so that it can confirm that whatever responses it is providing is correct and beneficial to user.

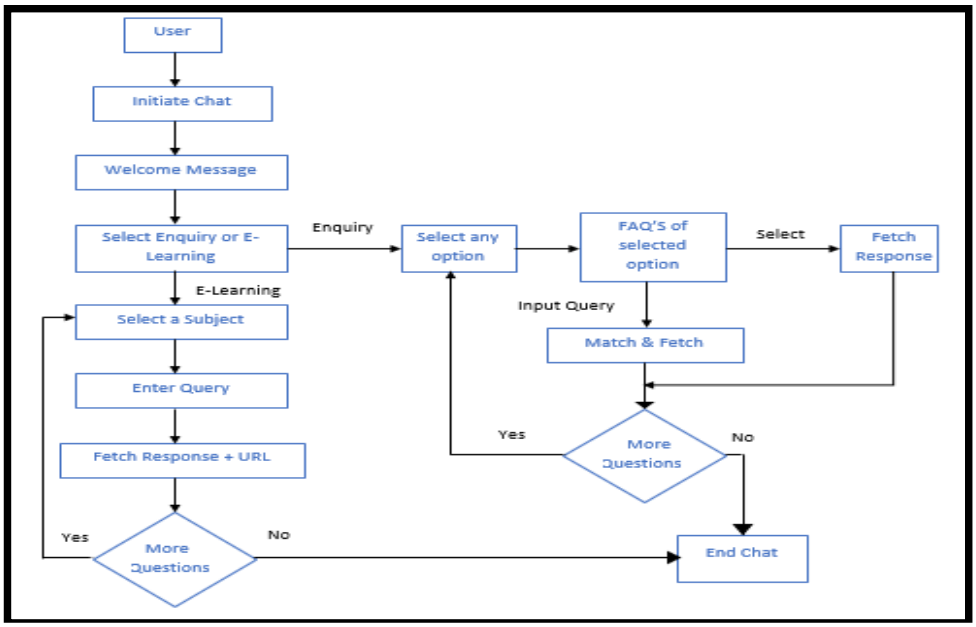

Fig.1 Flowchart of AISSMS POLY chatbot

Algorithms used in our project are:

1. Natural Language Processing:
The word itself implies that it tries to understand the natural language that is human language. This algorithm attempts to learn through machine learning and an abundance of conversational data, the intricacies of human language. It extracts the intentions of user from the given phrase. Even if there are spelling mistakes or grammatical errors still our chatbot will try to understand the intention of the user and will match with the database accordingly and give the appropriate response.

2. Speech Recognition:
Speech recognition focuses on the translation of speech from a verbal format to text one. It is a capability which enables a program to process human speech into a text format. This technique will expand the capability of our bot. Because many times user is tired to type his/her queries therefore speech recognition is must in chatbot.

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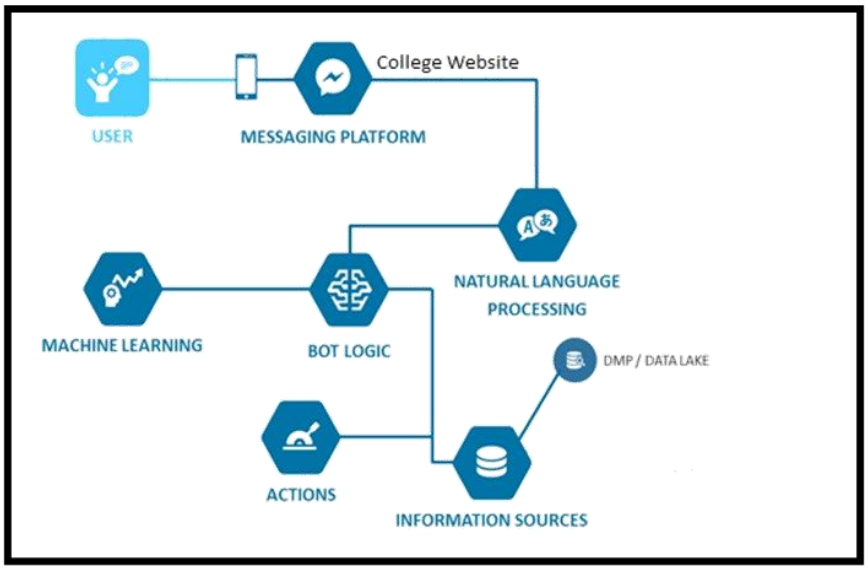

Fig. 2 Architectural diagram of AISSMS POLY Chatbot

IV. RESULT

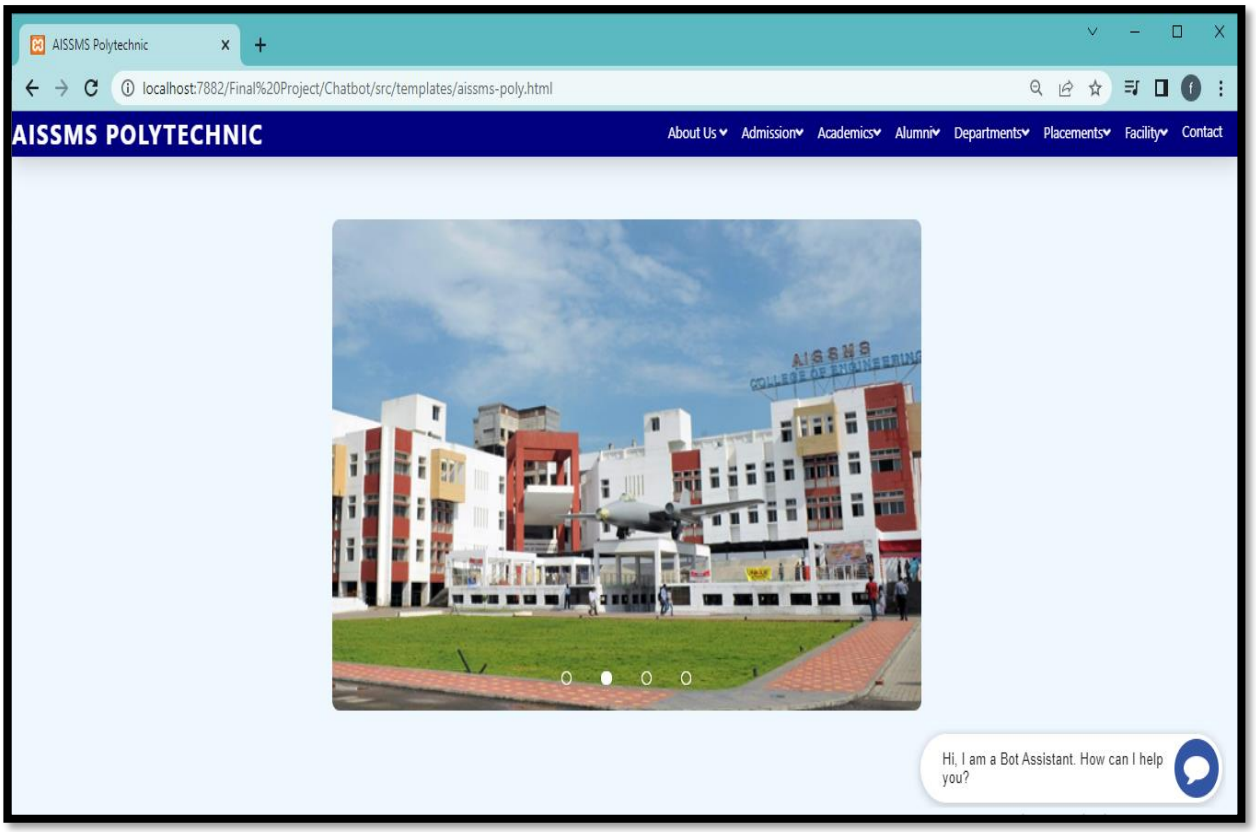

Fig.3 First display On load of website

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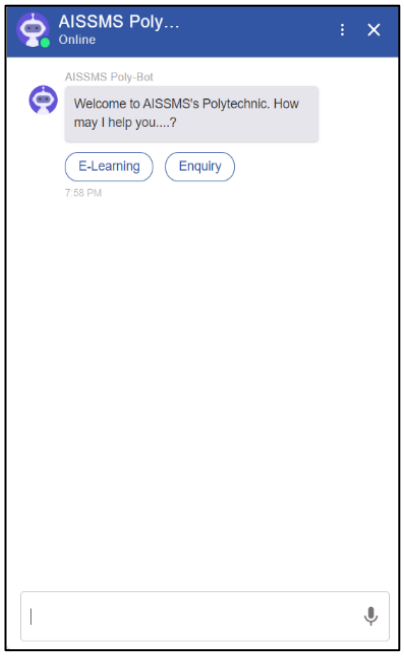
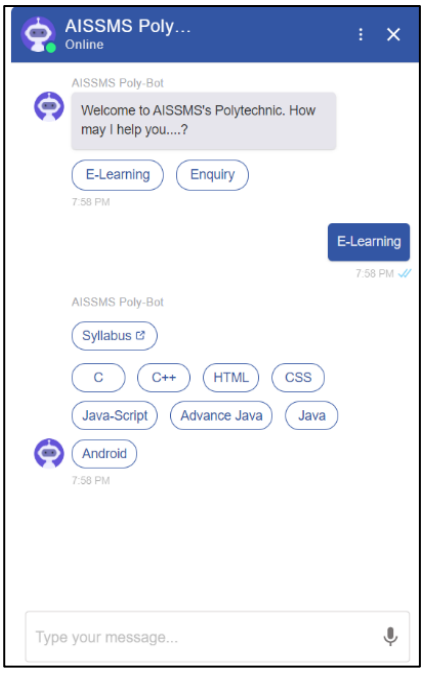
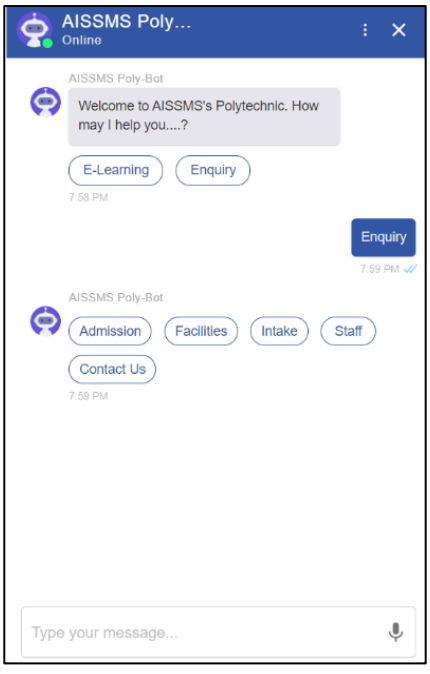


The above shown image is the default view of the chatbot





In this, if a user clicks any one of them by default buttons the above screen will be displayed.

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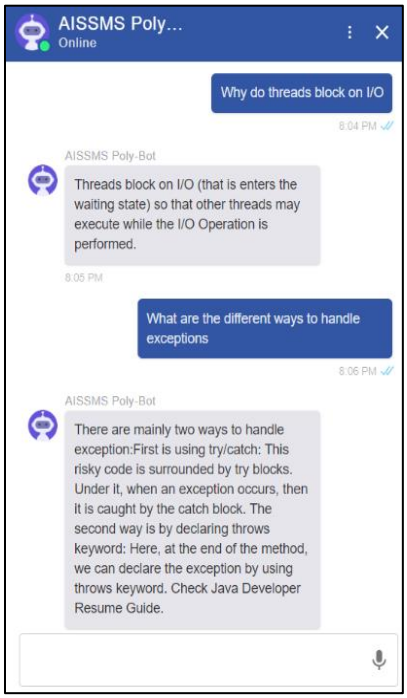

In this the chatbot is giving the response to the user's query.

V. CONCLUSION

In this paper we have implemented a Chatbot for E-Learning using Machine Learning for AISSMS's Polytechnic which will reply to the user query in minimum time and more accurate. The machine learning algorithms are used for implementing it. The user can ask his/her queries either related to College Enquiry or E-Learning and then the system identifies the intent of user by NLP and will produce the output. The main motive of the project is to reduce the work load on the college's office staff as many students ask the same questions to them every year, and reduce the response time for user. The future scope of this project can be: If the data is not available in the static database, then it should be fetched from online resources.

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