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# Automated College Enquiry System Using ML

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**ABSTRACT:** Artificial intelligence is currently having a significant impact on a wide range of businesses, from those that make products to those that provide customer service and public relations. Chat bots are intelligent computer programmes that can interpret and answer questions from users in their native tongue. A chatbot will respond in a discussion just like two people would. As there are numerous chat bots or artificial intelligence (AI) systems available online that assist users in finding solutions to their difficulties. Therefore, we are going to create an AI-based virtual assistant that can answer any questions about our college. This will function as a machine with college-oriented intelligence. Students will receive answers to their questions about college-related topics via this virtual computer.

**KEYWORDS:** Chatbot, College enquiry, NLP, NLTK, dialogflow

## I. INTRODUCTION

Freshmen or new college students sometimes need information about the college, such as the timetable, upcoming activities, information about the faculties, departments, and placement statistics. The conventional method—making phone calls, visiting the school website, or sending emails—takes a lot of time and is inconvenient because you must wait a long time before receiving a response from the other side. In some circumstances, contacting doesn't help if no physical assistance is available. Over the past few years, chatbots have changed the way that people communicate, and most websites now favour chatbot contact over real-world call support. Therefore, a voice chatbot is the most user-friendly and always accessible alternative to reduce the workload of university offices and boost student-college engagement without really requiring a physical person who might support a student-engaging system with a fantastic user experience and quick response.

### A. Chatbot fundamentals

A chat bot is a machine with artificial intelligence that can communicate with people. If the query is voice-based, it may be text-based or a spoken conversation. In essence, chatbots are employed for information gathering. Although it may be used with mobile devices and desktop computers, most people access it online. It has the power to compel, enthrall, and spellbound. It is a conversational agent that engages people in a particular domain or on a specific subject by taking input in the form of natural language sentences.

A user must first ask a question or start a new topic of conversation for a chat bot to function. Software agents that mimic human beings are known as chat bots.

### B. A college chatbot

College websites are slow, an outsider wouldn't know where to look for a specific piece of information, and it is challenging for someone outside the college's domain to extract information are just a few of the reasons why a college inquiry system is necessary. The system is necessary because of the clever answer to all the problems. The college inquiry system will respond by summarising the user's enquiry and then outputting replies. It also gives the user with only the information they require. All responses pertaining to areas like admission, the examination cell, the notice board, attendance, the placement cell, and other unrelated areas will be provided by a college system.

The chatbot's main characteristics are:

- Through it, questions relating to college entrance might be resolved.
- Looking into user profiles and retrieving attendance, grades, and point totals.
- Students in colleges can learn more about upcoming exams.
- College students can obtain information on placement activities.

### III. RELATED WORK

Chat bots are the knowledgeable systems that understands and responds to the question asked by users in their own language. Chat bot responds in voice communication a touch like however a person's move with each other. throughout Institute's tutorial Admission procedure there is a massive queue at the enquiry window. Students simply have to be compelled to add question range to the chatbot and it can answer to student question. A login and register system webpages can also be additional inside the system to forestall unknown users from gathering details. The user might offer their suggestions through the suggestion box. The system replies exploitation AN economical Graphical worm that suggests that as if a real person is interacting with the user. This Chatbot is usually a sort of service that is in a position to be your agent providing you enquiry data regarding faculty[1]

The Development of this chatbot is done using Microsoft bot framework, which is using Microsoft cognitive service i.e. LUIS.ai for training language model which is used to identify intent of the user and fetch an appropriate response. The user can ask the query in any format and get appropriate response on basis of pattern matching algorithm in LUIS.ai.[2]

Nowadays, many people are using smartphone with many new applications i.e. technology is growing day by day. Today Artificial Intelligence is playing a major role in a variety of fields ranging from industries in product manufacturing, to customer care in public relations. As there are many online Artificial Intelligence (AI) systems or chat bots which are in existence that help people solve their problems. So, we are going to implement a virtual assistant based on AI that can solve any college related query. This will work as a College Oriented Intelligence machine. This virtual machine will respond the queries of students on college related issues. A chat bot has information stored in its database to identify the sentences and making a decision itself as response to answer a given question. The college enquiry chat bot will be built using algorithm that analyses queries and understand user's message.[3]

We are using Rasa NLP, we have used dialogflow to make interaction with chatbot and also the NLP toolkit. This chatbot was developed using Machine Learning Algorithms. Chatbots are prepared to change UI design. Chatbots are programs that duplicate human conversation using Artificial Intelligence (AI). [4]

### IV. METHODOLOGY

#### A. PROPOSED SYSTEM

##### a. Context identification:

Applies pre-processing to the input text to standardize it Enter according to your system requirements. based on keywords used in text are in proper context accepted.

##### b. Personal Question Answering System "Module-1":

In response to personal requests such as CGPA and attendants, Confirm the authenticity of the user using the user ID, etc .and password. Appropriate if user details are invalid A response is sent. If the user is successfully authenticated, the input text is processed to extract keywords. based on keywords Information that users need to understand and Information is provided from a database.

##### c. AIML-enabled system "Module-2":

When the user tries to have a normal conversation, The bot will map the input to the appropriate pattern AIML files (Artificial Intelligence Modelling Language). If a response is available, it will be sent to the user. Other data Provided to the chatbot, such as username, gender also saved. If the pattern is not available in the AIML file, A random response stating "invalid input" is sent.

##### d. Query Analysis and Response System "Module 3":

If the user is asking for information about the university, The answer will be provided through this module. If the input matches a pattern in her AIML file, An appropriate response is sent to the user. For AIML The file does not have an entry for that particular query pattern. Keywords are taken from the input. An algorithm (NLP) for checking sentence similarity is Applied to the modified input to check for similarity with the answer is accessible. If the sentence is retrieved with confidence  $> 0.5$ , It will return the answer to this question as an answer. If there is no question associated with the user input, the input will be saved Log files for administrators to improve the system. Admins can



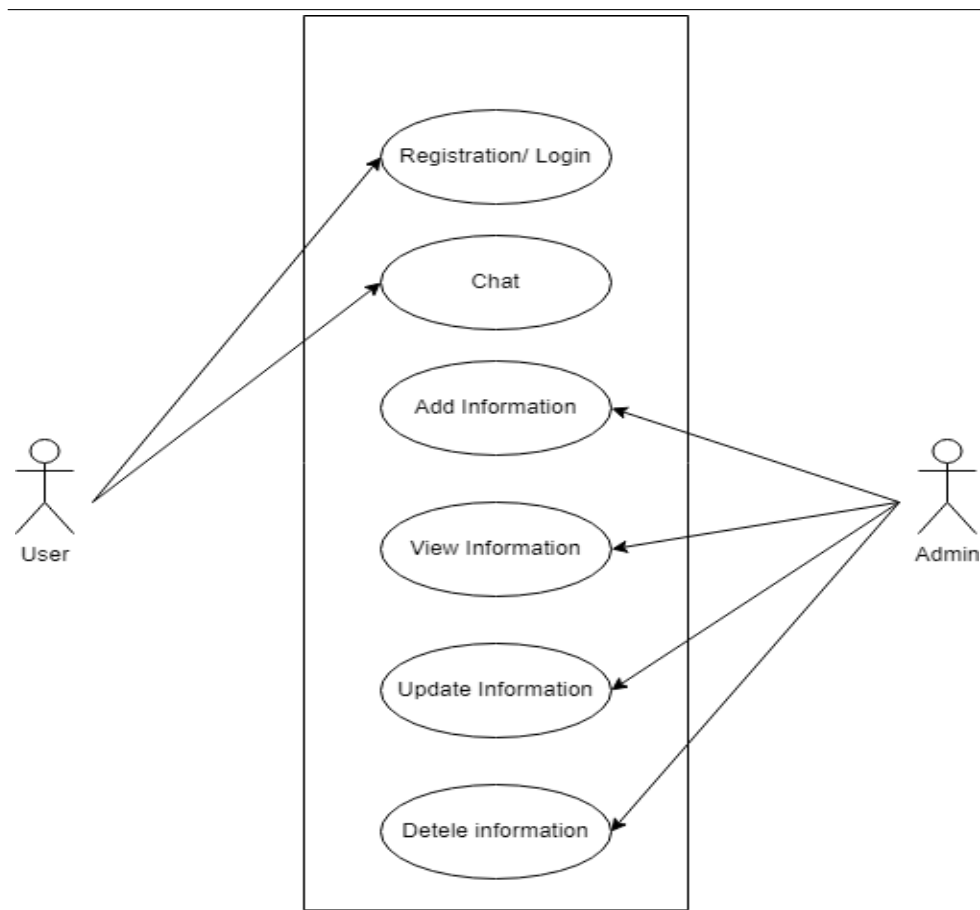
consolidate responses to this query in the knowledge base if s/he finds it convenient. Also, a random response is sent to the user suggesting “Answer not available”.

e. Context reset:

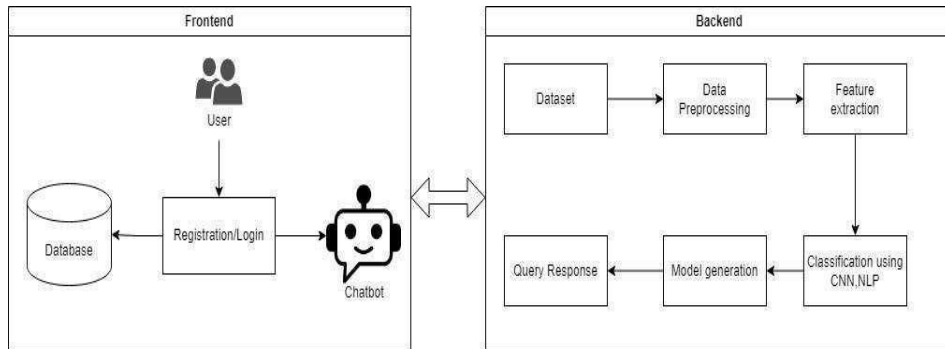
If the user is satisfied with the bot's response, then if you do not wish to continue chatting, he/she system or just exit. When the user exits the system, all input Parameters are automatically reset.

B. Diagrams:

a. Use Case Diagram:



b. Architecture Diagram:

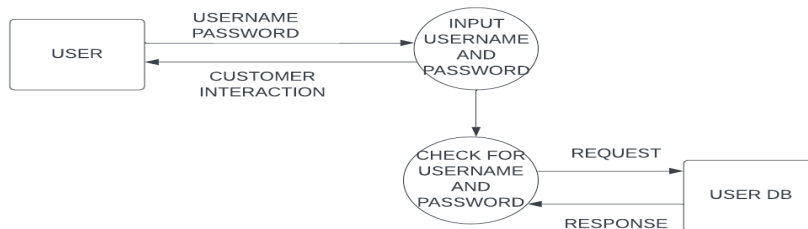


c. Data flow diagram:

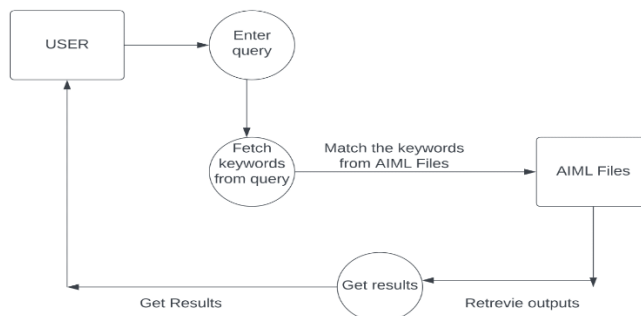
1. Level 0:



2. Level 1:



3. Level 2:





### C. Implementation

#### a. AIML:

To create a knowledge base for normal conversation, It used an AIML file to store the question and answer pairs. Input is matched when the user talks to the chatbot. For the patterns listed in the AIML file, the corresponding answer is returned as an answer.

The sample AIML file structure is as:

```
<aiml version = "1.0.1" encoding = "UTF-8"?>
<category>
<pattern> HELLO USERNAME</pattern>
<template> Hello User!</template>
</category>
</aiml>
```

#### b. Lemmatization and POS Tagging Using WordNet:

Information extraction from input text is Extract keywords. For example, "Current deployment scenario", "Current", "Ranking", The keyword is "scenario". matching lemma for Keywords were found using lemmatization and POS tagging. Summarize the various conjugations of a word. For example, require, requires, and required should map to Required. WordNet from Python's 'nltk' package was used this purpose.

#### c. Semantic Sentence Similarity:

There are various combinations that the user can enter same query. for example,

Q1:

What is PG course re-registration notification?

Q2:

Tell me about your PG course feedback University.

Both Q1 and Q2 have the same meaning (same meaning). again, There are many more combinations for the same query. Finding all these combinations is impractical. Of System scalability and performance are also maintained to be influenced. To overcome this problem, a similarity was discovered Between user input and queries present in Available Question set (answers are available in the system). Queries that match input with maximum score The query matching the maximum score input is selected (if it is greater than the threshold) and the corresponding query is selected. A response is returned. The similarity value for two sentences is calculated as follows: Average the similarity of each keyword from these Sentence. Each keyword in the first sentence is matched find a word in each keyword in the second sentence most similar to him. Then similar values of Individual words are averaged to represent sentences Similarity. Find Word Similarity - Path Similarity and Wu-Palmer (WUP) affinity is used. Path similarity computes the shortest number of edges from the meaning of one word to the meaning of another, Hierarchical structure like WordNet. meaning of common words Those with longer roots are less similar than these at very short distances, e.g. human, dog-to-human, Tree (The expectation is that humans are more like dogs than they are on the tree). The Wu-Palmer metric weights edges based on Distance in hierarchy.

#### d. Log files:

It keeps a log file where the input is saved. The chatbot was unable to respond. Admins can see logs. Add relevant phrase answers to Knowledgebase. This helps us improve our chatbot knowledge system i.e. the databases.

d. EXPERIMENTAL RESULTS

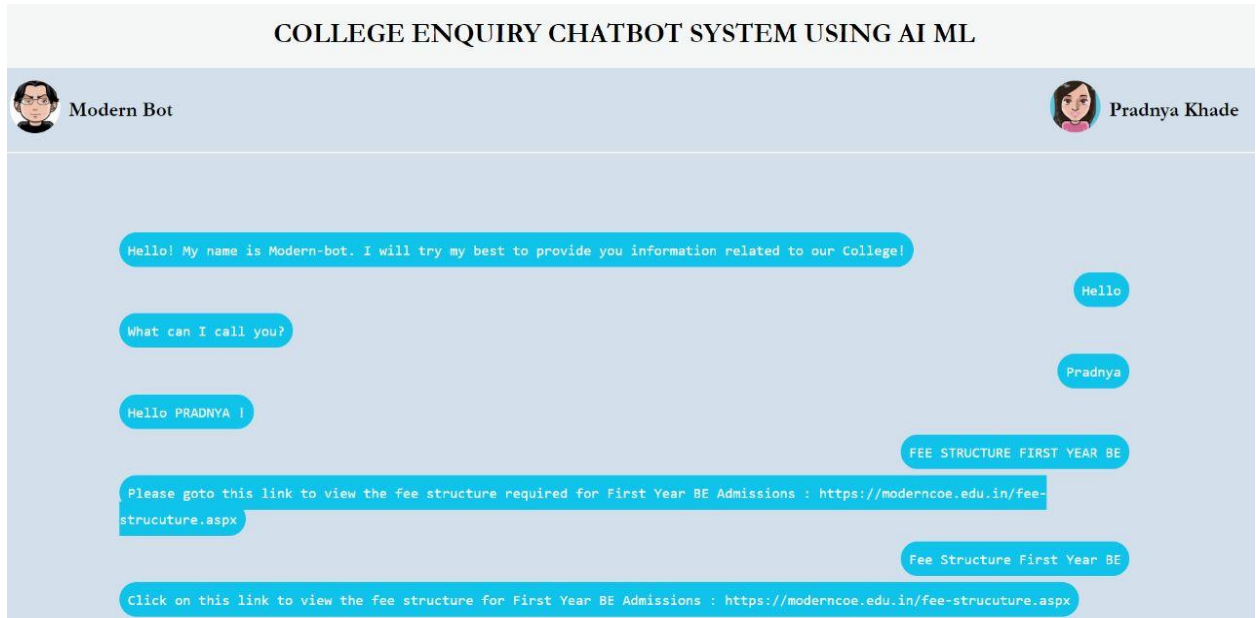


Figure 1: Start of Conversion with Bot ( Snapshot of chatbot )



Figure 2: Enquiry about documents required ( Snapshot of chatbot )



Figure 3: Enquiry of Intake for MBA ( Snapshot of chatbot )



Figure 4: Enquiry for FEE Structure( Snapshot of chatbot )

## V. CONCLUSION

A single interface is frequently unable to provide access to all the data without complicating matters by requiring users to navigate through numerous forms and windows. By offering a standard and user-friendly interface to address questions from college students and teachers, the chatbot for colleges attempts to eliminate this challenge.

A chat bot system's goal is to mimic a human conversation. Its architecture combines a computational algorithm and language model to simulate online information exchange between a human and a computer using natural language. Both employees and college students are welcome to post their inquiries. The chatbot gets the pertinent connections to their question and conducts a quick and effective search for the information. Background research was done which contained an overview of the progress of the conversation and tries to find relevant keywords related to the given query provide the correct link. Database storage includes information about questions, answers, keywords and protocols. We also developed an interface. Interface developed will have two parts, one for the user and the other for administrators.

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