

# Athena – Student Assistant Chatbot

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**Abstract** - Chatbot is an automated program that simulates human conversation through voice or text inputs or both. It is not limited by time or location which makes its implementation appealing. These systems use Artificial Intelligence (AI) and Natural Language Processing (NLP) algorithm to understand user's requirement. Conversational agents become essential for machine interaction with humans to provide natural language interfaces. This paper elicitates in building a conversational system for students to easily acquire the desired information of the university using Artificial Intelligence Markup Language (AIML) approach. In this paper, we provide the design of Athena, a student assistant chatbot to enhance the user experience while delivering accurate and efficient response for any user queries about the university.

**Key Words:** AIML, Chatbots, Conversational agents, NLP, Student assistant, University chatbot

## 1. INTRODUCTION

Chatbots are now becoming intrinsic to the way we live our everyday lives. Chatbot is a conversational agent that can automate the chat interactions with humans [1]. It indicates a software program having the ability to carry out natural conversations [2]. A bot allows the user to ask queries in the similar way that they would address a human being. This technology is getting increasingly popular with its widespread use in various domains such as customer support, medical, entertainment, e-commerce, travel, etc.

Chatbots are now becoming essential in several industries. One such industry which can truly gain from this technology is the education sector. Many a times, students have trouble finding various information such as allotted seats, document requirements, term schedule, etc. during their admission process. And often, many applicants, as outsiders, face difficulty in searching for a particular piece of information from the website. Due to which they sometimes visit the college to gather related information as per the needs. This process can be monotonous and time consuming. Also, it requires manpower to handle the visitors. Hence, to overcome these drawbacks, a chatbot can be developed.

Athena, our student assistant chatbot will analyse user's queries and respond accordingly. This system will provide the answers related to admission, placement event, scholarships, notice board, attendance and results, frequently asked questions and other miscellaneous domains.

The major features of our chatbot are:

- Answering admission related inquiries
- Providing information about examinations
- Giving particulars about placement activities
- Handling frequently asked questions
- Simplifying accessibility of website information
- Retrieving attendance and pointers
- Accepting user input in text or voice formats
- Returning data in both text and voice formats

## 2. PROPOSED SYSTEM

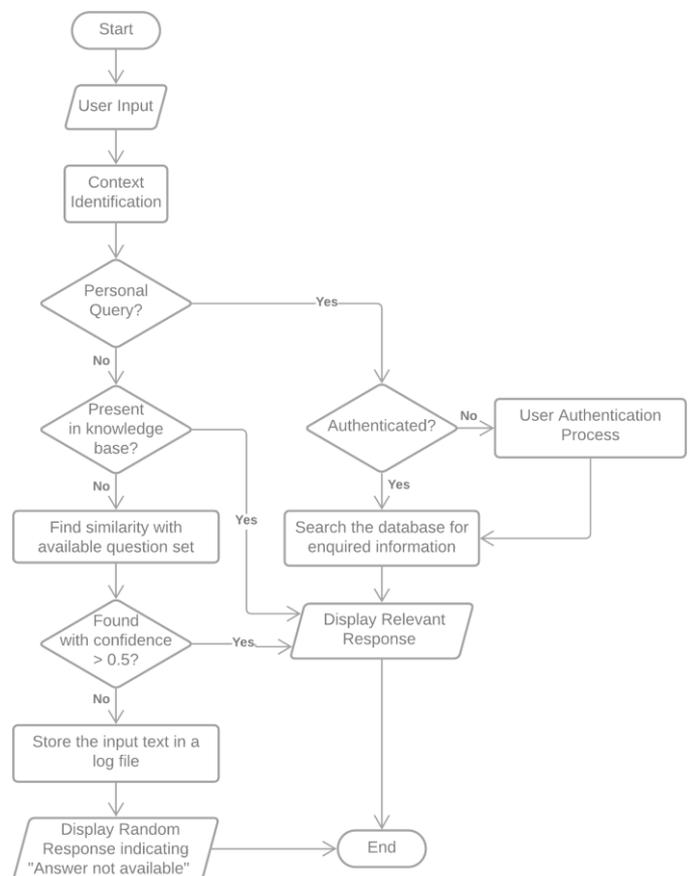


Figure 1: Flow of the System

To overcome the challenges of traditional inquiry process where students or parents often need to manually visit the college, Athena - Student Assistant Chatbot is proposed. The purpose of the system is to reduce the communication gap between students and college. Our goal is to create a system which can efficiently answer all the user's queries.

This system dispenses selective information based on user's requirements. It answers the query as though it is replied by an individual. This eventually makes the users more comfortable with this application. Apart from that, it is accessible from anywhere and anytime, providing instant assistance, saving time and reducing manpower.

This system is a web application. Initially, the query is entered by the user. The user has an option to manually type this query or use our speech-to-text feature to automatically get their query in the text format. This input text is then pre-processed to regulate it as per the system's requirement. Context is identified based on the keywords used in this text. If the context is recognized to be a personal query like grades, attendance, etc., the user authenticity is checked. This is done by providing a valid username and password. If the detail is invalid, a suitable reply is sent. In the event of successful user authentication, the required information is searched in the database and the relevant message is delivered. Apart from that, if the user requires some general information such as administrative queries, placement information, etc., the system searches the knowledge base. The input text is mapped to an appropriate pattern in Artificial Intelligence Markup Language (AIML) files. AIML is defined with general queries and messages which are replied by applying AIML formats [1]. The system will send the corresponding message in case the pattern matches. If not, the system checks the similarity of the input with a predefined question set whose answers are available, using an algorithm (NLP). When a sentence is found with confidence > 0.5, the system responds with the answer of that question. In case no such sentence is returned, the input text is saved in a log file for further improvement and a random response suggesting 'answer not available' is displayed. Admins have the ability to view this file and add the relevant data to the knowledge base. All the responses the system delivers are in text and audio formats. Whenever the user does not want to interact further, he/she can log out of this system or directly exit. This will automatically reset all the input parameters.

### 3. IMPLEMENTATION

In this section, we explain the working of our proposed system illustrated with the help of screenshots shown below.

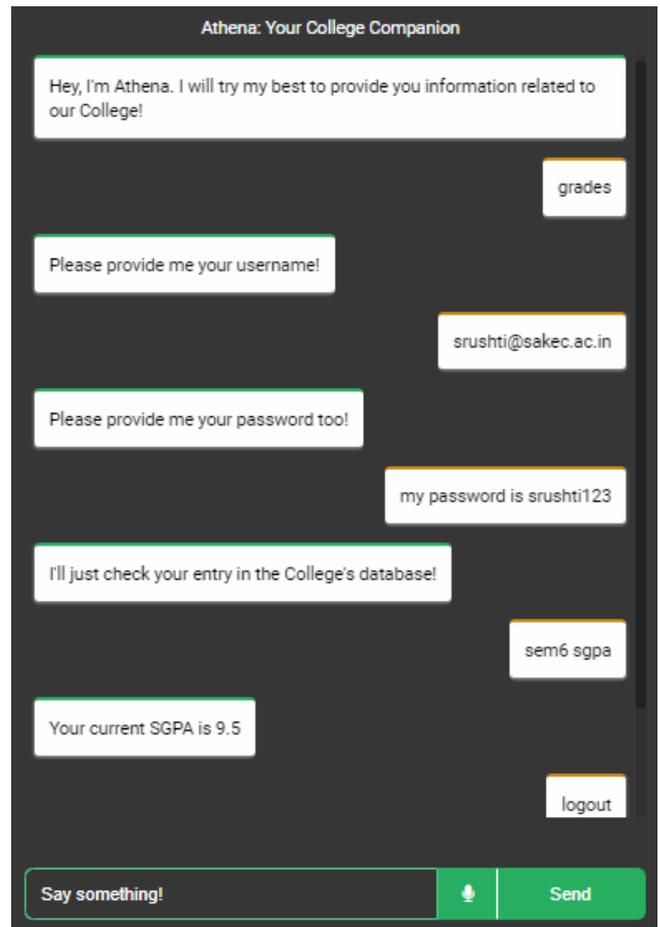


Figure 2: Output for User Validation Module

Some information like grades, pointers for a specific semester, etc. requires authentication. The username and password is checked from the database. Only the valid user can retrieve his/her information.

Athena analyzes the user's queries and replies duly. It checks the knowledge base first for similar patterns and if no matching result is found, returns default message. The query that it could not answer will be stored in a text file for further improvement of the knowledge base. The users can use the speech-to-text feature to ask their query instead of typing it. Athena also responds in both audio and text format.

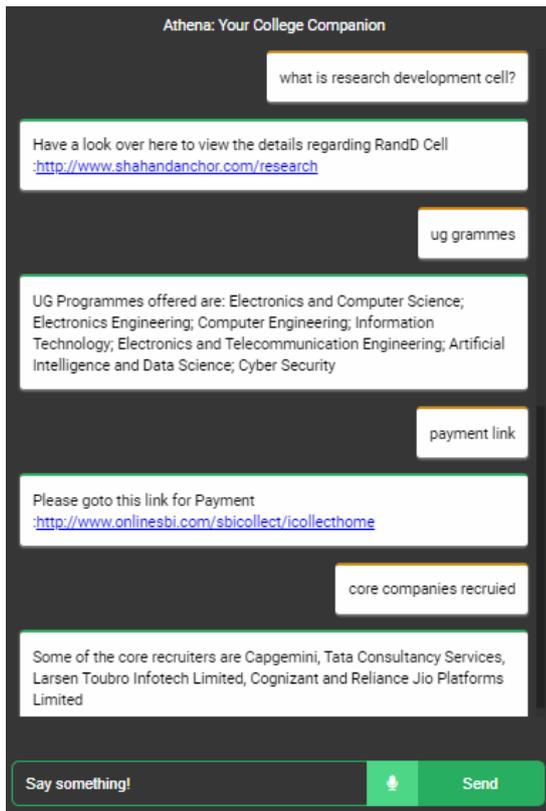


Figure 3: Outputs of Standard Queries

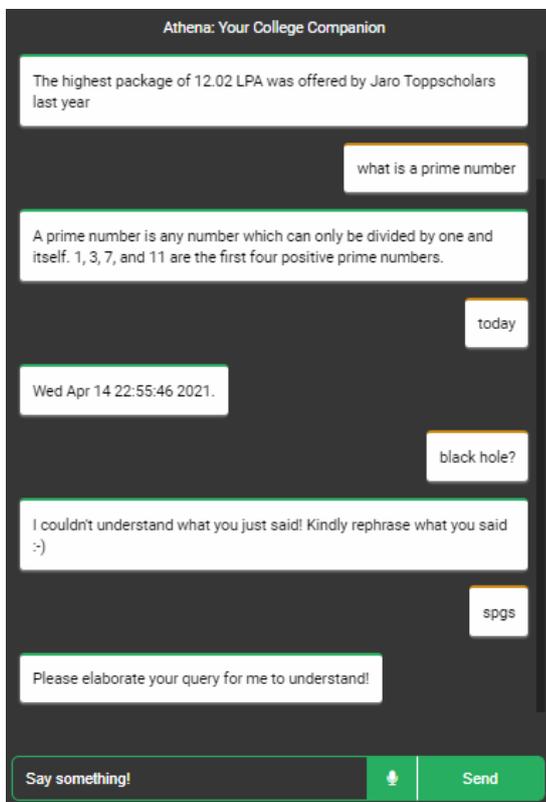


Figure 4: Outputs of Unexpected Queries

#### 4. CONCLUSIONS

In today's scenario, the lifestyle of people have changed. People now prefer online round-the-clock service for assistance. With growing preference towards faster services, chatbots are increasing in popularity.

Chatbot is a best tool which presents a prompt way to communicate with the users. It allows the users to ask queries in natural language and easily obtain the desired information, while providing a quick way of assistance and task completion.

This paper issues the details about the system flow and implementation of Athena. Sometimes collecting information becomes too complimented where a new student has to navigate from one website page to another. Athena, student assistant chatbot aims to overcome this problem. This chatbot provides a user-friendly interface to solve the queries of users. The users can ask questions about the college related to academics, admissions, placements, results and other sectors through this chatbot. It will help everyone save time and retrieve information anytime and anywhere.

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