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Information Chatbot for an Educational Institute

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Abstract - *This paper provides an overview of a ChatBot, primarily designed for accessing information from an educational institute. Students of an institute are constantly involved in various exams and activities. To access such information, a student has to physically visit the information center as not all information has reached all the students.*

This paper proposes a chatbot, which makes it easier for the student to access such information by directly asking the chatbot about the information they need. The students can access such information using natural language as if they are having a conversation with a human itself and the human is answering their questions. This system also helps prospective students to analyze their probability of getting admission to the college in their preferred department.

The understanding and recognition of a user's query is the most basic and important step in the development of a chatbot. Different chatbots with different purposes all have some special questions and queries, which are relevant to their purpose and are uniquely understood by those chatbots.

The proposed chatbot system understands the special keyword and questions related to an engineering college. The system recognizes these queries in text and speech format using Natural language processing and provides the user with an answer.

Keywords- **Chatbot, Artificial Intelligence, Natural Language Processing, Prediction, Machine Learning.**

1. INTRODUCTION

Chatbots are typically used in dialog systems for various practical purposes including customer service or information acquisition. Some chatbots use sophisticated natural language processing systems, but many simpler ones scan for keywords within the input, then pull a reply with the most matching keywords, or the most similar wording pattern, from a database. A user can ask a chatbot a question or make a command, and the chatbot responds or performs the requested action. Different chatbots with different purposes all have some special questions and queries, which are relevant to their purpose and are uniquely understood by those chatbots.

Many students require various kinds of information concerning their college and university schedules and activities. To access such information, the students have to reach out to their respective colleges and university. This results in delayed access to information and increased labor on the institution's side. Going digital is the way to solve this problem and chatbots are an effective answer for this. This paper proposes a system for tackling the above issues with the help of a chatbot.

2. LITERATURE SURVEY

Roshan Khan in Standardized Architecture for Conversational Agents a.k.a. ChatBots proposes a standardized architecture for a chatbot solution and identifies several critical components required for its effective implementation. Applying such components will influence the performance of the chatbot. In this paper, bots are classified into three main types personal assistant, customer service and functional bot and proposed standardized architecture can be implemented specifically for these three different chatbot solutions. Applying the techniques that are discovered in this paper will ensure a superior experience to customer services and delivery. [1]

In the paper An Intelligent Behavior Shown by Chatbot System, the authors Vibhor Sharma, Monika Goyal, Drishti Malik use a pattern-matching algorithm using depth first search (DFS). The first step in developing the FAQ bot consisted of extensive brainstorming and writing down as many questions as possible. This assisted in allowing FAQ bot to intelligently match pattern (inputs). For doing that new AIML files are created and coupled with the conversational knowledge base of ALICE bot. The system is more user interactive as it responds to the query entered by the user very accurately and precisely because it is a domain specific chatbot system. But it is restricted to the data present in the datasets. [2]

Ibrahim A. Hameed in the paper Using Natural Language Processing (NLP) For Designing Socially Intelligent Robot proposes a system platform, which is implemented using Python SDK and the code run on a remote computer connected to NAO robot. A python implementation of the Rapid Automatic Keyword Extraction (RAKE) and search for text functions are used to extract personal information and keywords. Understand complex human questions; be able to identify a credible source for the answer, and figure out the answer. NLP failure leads to storing the whole sentence and manual fixing thereafter. [3]

In the paper, Survey on Chatbot Design Techniques in Speech Conversation Systems, Sameera A. Abdul-Kader, Dr. John Woods describe the similarity and differences in the techniques and examines the significant improvements in Chatbot in the past Decade. [4]

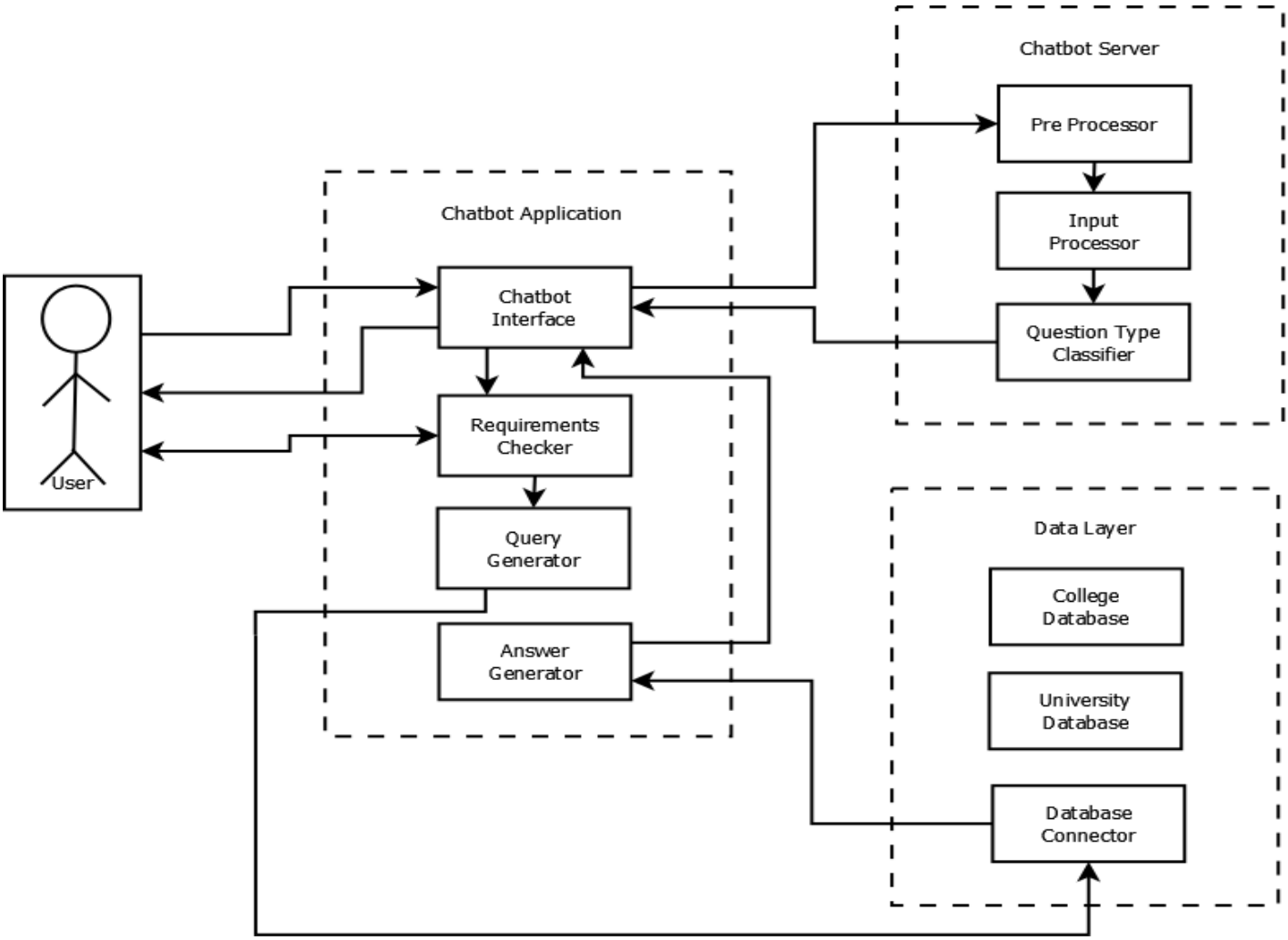
3. SYSTEM OVERVIEW

The system is divided into two primary parts. First is the chatbot user interface in the form of an Android application through which the users will communicate with the system. The second part of the system includes the backend functionalities in which a server is set including different modules such as text recognition and context understanding and question classifying. The main perspective of the project is to provide a human conversation like experience to the user with respect to college information.

The chatbot system processes the input using machine-learning paradigms and fetches a corresponding output from the database. The query used for data fetching is generated in such a way that it accurately reflects the intentions of the user's question. The fetched answer is then displayed to the user in natural language form so that the user feels as if the conversation is being carried out with a human.

4. PROPOSED ARCHITECTURE

The input is taken from the user in speech or text format. This input is sent to the chatbot server where input processing is carried out. The chatbot server returns the question type. The chatbot then generates the query based on the question type. If the question type's requirements are not fulfilled, the chatbot interface asks the user to provide more information. Once that information is provided, the query is generated. The query is then sent to the database and the answer is fetched. If the answer is in text format then it is converted into natural language form and then displayed to the user.



5. METHODOLOGY

[A] Processing Input:

1. Start.
2. Get the input question from the user.
3. If(input in Speech format)
4. Convert to text
5. Split the input query
6. Remove irrelevant words
7. Recognize relevant entities
8. End.

[B] Processing Question Type:

1. Start.
2. Get the relevant entities.
3. Get the context of the input query.
4. Based on the relevant entities and context, classify the question type.
5. Return the question type to the chatbot interface
6. End.

[C] Processing Requirements:

1. Start.
2. Get the question type.
3. Analyze the requirements corresponding to the question type
4. while(all requirements are not met)
5. Ask the user to enter missing requirements
6. End.

[D] Processing Answer:

1. Start.
2. If(all requirements met)
3. Prepare the query to the database based on the values of the requirements
4. Fire the query
5. Get the answer
6. If(answer's type is text)
7. Convert answer into natural language form
8. Show the answer to the user in the chatbot interface
9. Stop.

[E] Predicting Admission:

1. Start.
2. Gather previous few year's data
3. Build a prediction model based on Naïve Bayes algorithm
4. Get the student's information
5. Predict the possibility of a student getting admission into the educational institute
6. Stop.

6. ADVANTAGES

A. Students get easy access to information.

B. Precise prediction of whether a prospective student gets admission or not is provided.

C. A specialized chatbot with a special purpose natural language processing system for educational institutions.

7. CONCLUSION

The proposed chatbot system helps students with college information access and help with admission prediction. The system not only benefits the student but also the college institution as it helps reduce the need for excess manpower. The system makes information access easier for students. The input processing carried out within the system efficiently processes keywords related to colleges and education. Thus, making the implementation of a specialized chatbot for engineering college.

8. FUTURE WORK

The proposed system can be further worked upon and the input processing can be expanded to all the words in the dictionary. The speech and text recognition databases can be expanded for this purpose. The scope of questions that are recognized by the chatbot can be enlarged by adding to the database, fine tuning it and taking feedback from the user.

9. REFERENCES

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