



# A Digital Guidance System Based on Natural Language Processing

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**ABSTRACT:** The institute require a person who can answer questions of visitors or students about college facilities. The proposed system try to eliminate need of human being for such task by setting a un AI based computer system. The system will take user queries via text or in speech form. Based on question asked system provide information related to college facilities to improve the performance of the system. It also takes feedback of the responses from the user. Also if the system can't answer a particular question then the same will be updated in the database.

**KEYWORDS:** Chatbot, Query, NLTK, Pattern Matching

## I. INTRODUCTION

The concept of chatbots has not been a new in this technological growing society. Our project acutely deals with an important section of this growing entity, focusing the usage of the chatbots in the field of education, especially higher education. The current model of the project is made to handle the growing student population in the country, helping streamline the process of the admissions across various institutes across India. The model deals on a real time basis with the students clearing the rings of doubts in minds of students. Currently students rely on the knowledge of parents, relatives and acquaintances and obviously the ranking institutes as well questionnaire sites like Quora, to know about any specific institute. It is not practically feasible for the institutes to fix up a real time doubt clearing assistant to assist the seekers. This is where our chat bot comes to the aid. It is designed to carefully help students. The bot works on the real time data provided by the institutes itself to increase reliability and increasing transparency for students.

We are trying to implement a Domain Specific Knowledge System working on the area of the college assistance required. Thus considering the vast scale of admissions here, the chatbot seems to be a big burden reliever if implemented on a large scale with efficient approach, helping thousands choose the best and most suitable for them.

## II. RELATED WORK

Currently chatbots generate responses using a variety of approaches. Some of the popular approaches is to use machine translation, retrieval based response selection and recurrent neural network sequence generation. Every chatbot uses a huge corpus to gather inferences from it. Most recent chatbots use social media content for their database. Micro blogging sites such as twitter can be used as a rich source of data but no real work has happened using this source because of insufficient evaluation. Each chatbot follows almost a common methodology. The first step will involve preprocessing, followed by identification of intent and entities. Since the responses are generated statistically they can get repetitive after a while. An intelligent bot must be able to react to the context and change its answer according to changes in the environment. Further studies are going on in this field of AI.



### III. IMPLEMENTATION & METHODOLOGY

#### A. Proposed System

The proposed system works as follows:

Step 1 : User will ask queries via text input or speech form through microphone.

Step 2 : The system tokenize the response by using NLTK(Natural Language Tool Kit) and Filter the same.

Step 3: If the match is found the answer will be generated and displayed on the screen and Conveyed via speaker.

Step 4 : If no match is found the question will be stored in a “No-Answered Question Database”.

Step 5 : At the end feedback is taken from user to access level of satisfaction through 5 star ratings and comments for improvements.

#### B. System Architecture

##### a) Chat User:

Basically, chat user is student or visitor who is asking questions to chat bot. He/she wants to clear his/her doubts. User ask query via voice or text form and after some time he/she will get the appropriate answer for the regarding query.

##### b) Chat Bot:

It is the simple desktop application who answers the query asked by user. It search for response which is already stored in Database by admin. When it find the proper response in database then it will display on screen to user and convey the displayed response via audio,too.

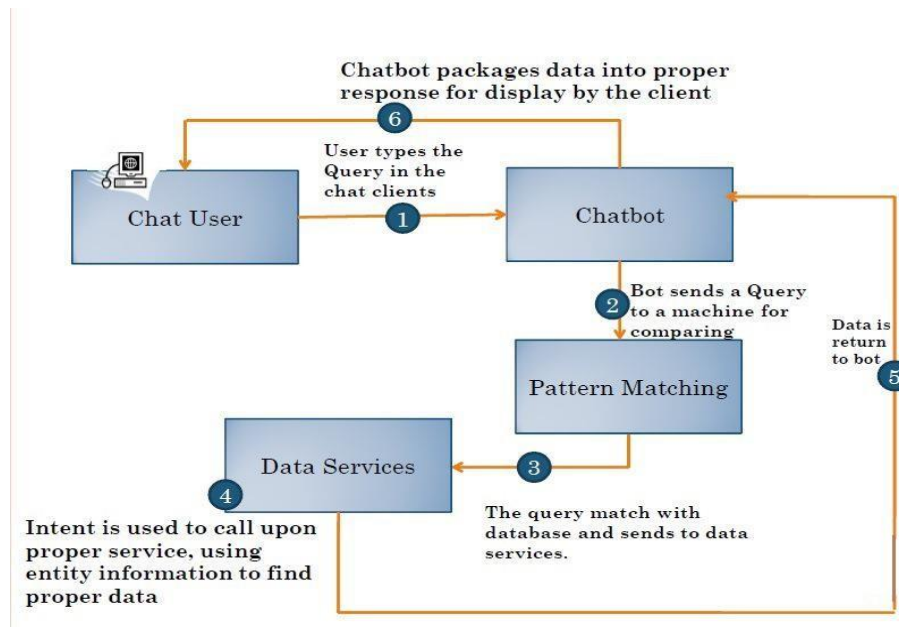


Figure 1. System Architecture



c) **Pattern matching:**

Chat bot has the feature to convert asked query into tokens. That tokens match with already stored tokens in database. When it finds the similar tokens then it will display response for asked query. For forming of tokens, chat bot removes stop words like is, an, the, what, when, ?, etc.

d) **Data Service:**

Basically, data service is Database which contains the lot of information stored by admin. It contains question ID, question and responses. Pattern Matching Tokens are also stored in Database by chat bot with token matching algorithm (NLTK).

The working flow of Chat bot is shown in the following flowchart :

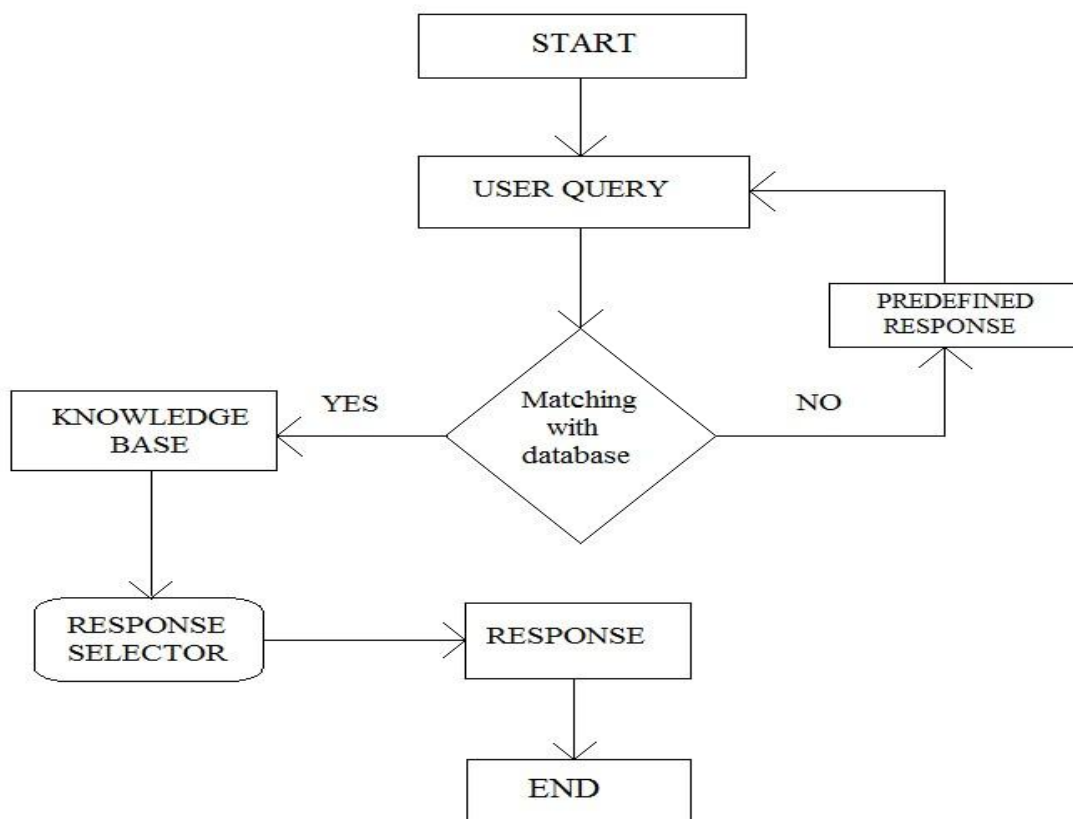


Figure 2. Flowchart of Proposed Model

C. **Modules**

There are some modules as follows:

a) **Text to Speech:**

When user ask query via text then bot will automatically convert text format into speech format. Response is also given via text which is later converted in speech format.

b) **Speech to Text:**

When user ask query via speech then bot will automatically convert text format into text format.

c) **Invalid Question:**

When asked question does not having proper answer shown by bot then user can also click on invalid question button to store that question in wrong answer database. Then admin take action on that question to find proper answer.



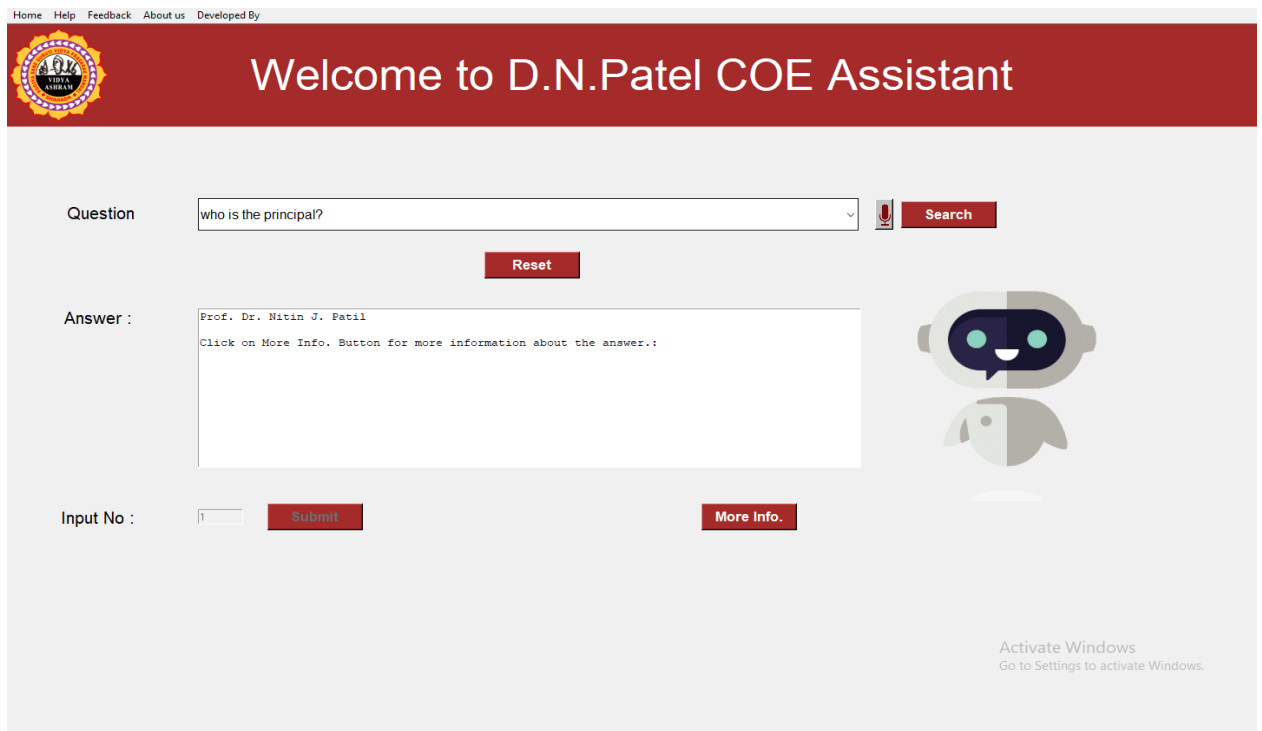
d) **Searching Query:**

Query is basically converted into tokens and match with stored tokens in the database. After that proper answer will generate by bot.

e) **Feedback :**

After getting answer of the asked question user will give feedback via 5 star ratings and suggestion to admin.

#### IV. RESULTS



#### V. CONCLUSION AND FUTURE WORK

The proposed system aims to remove the difficulty which is impossible to get all the data on the single interface without the complications of going through multiple forms and windows by providing a common and user friendly interface to solve the queries of college students and visitors. The college students and visitors can freely asked the queries.

In future, we are going to our chatbot online. It can also generate answers in other languages like Marathi, Hindi. We are also going to provide map and routes of desired destination in our chatbot. We are also going to make it fully AI based i.e no human interference.

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