An Intelligent Career Counselling Bot

A System for counselling

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Abstract - Chatbots are computer programs that simulate intelligent human conversation. The development and creation of new applications has been possible because of the design and production of interactive chatbots that help in a better way for the progress of the people. This paper will describe current efforts in the development of an intelligent Career Counselling Bot. Career Counselling project is built using artificial intelligence algorithms that are used for analysing user's queries and understand user's message. It provides some valid result to the query of the user. The User can query any career related query through the system. The user does not have to personally go to career counsellor for the same. The System analyses the question and than answers to the query as if it is answered by the counsellor.

This system helps the user to choose the right career that they should follow according to their interests and capabilities.

Keywords: Chatbots, NLP, Knowledge base, Artificial intelligence.

1. INTRODUCTION

Chatbots are the new generation computer programs that perform intelligent human conversation. Every chatbot has typically three parts. The first one is typed or spoken input from the user in natural language, second is the typed or spoken output from the chatbot and then the process of passing the input through the program so that an understandable output is produced. This whole process is repeated until the end of the conversation is reached.

The Career counselling bot is a system designed for users where they can ask any career related questions like best field to chose, latest trending course, etc. Even if the user does not frame sentence properly system will understands the query and answer accordingly. The user doesn't need to follow any specific format to ask questions. NLP(Natural Language Processing) concept has been used that is concerned with programming computers so that natural language is processed and used in order to get output to user.

The purpose of a chat bot system is to simulate a human conversation; the chat bot architecture integrates a computational algorithm and language model to emulate information chat communication between a human user and a computer using natural language. With the improvement of data-mining and machine-learning techniques, better decision-making capabilities, availability of corpora, robust linguistic annotations/processing tools standards like XML and its applications, chat bots have become more practical in daily life applications such as help desk tools, information retrieval tools, automatic telephone answering systems, advertising, tools to aid in education, business and Ecommerce. In E-commerce, chat bot helps in information retrieval tasks, such as for searching and browsing, as menu based navigation poses difficulties in locating the appropriate information[1].The dialogue system provides additional information on products and simplify decision making process to find a product that satisfy customer's requirements[2].

According to Dr. Wallace, perhaps, the biggest market of chat bot is Entertainment Markets, in which, we can imagine that chat bots can act as a talking book for children and provide foreign language instruction or can be a tutor in Intelligent Tutoring system. One such study used an ALICE system to help Chinese university students practice their conversational English skills. The study was qualitative in nature and used pre-existing conversational English skills[3].The study focused more on user attitudes rather than on chatter bot efficiency. It was discovered that 62% of users chatted for 10 lines or less, and that 8.5% of the time ALICE bot has no specific pattern to match the given input and had to rely on rootlevel generic responses. In all of these conversational entities, one thing is common; and that is, they are having the difficulty of maintaining dialogue for sustainable period of time[4].

2. LITERATURE SURVEY

2.1 Existing System

There are various chatbots in the market day to day that provide different types of services to the user using different methods. Till date there is no such chatbot that helps users in choosing their careers. Applications have been developed that help the students in choosing their career by asking some questions to find out the best career to chose. Chatbots have been developed with similar features but for some other application that help the user in their day to day activities with ease. These bots use Natural Language processing and various artificial intelligence algorithm that help them work in a better way to serve the user.

2.2 Natural Language Processing

Natural language processing (NLP) is related to artificial intelligence, computer science which is concerned with the interactions between computers and human (natural) languages and, in particular, concerned with programming computers that is used for processing large natural language corpora. Various aspects in natural language processing frequently involve natural language understanding, natural language generation, connecting language and machine perception, managing human-computer dialog systems, or some combination thereof.[6]

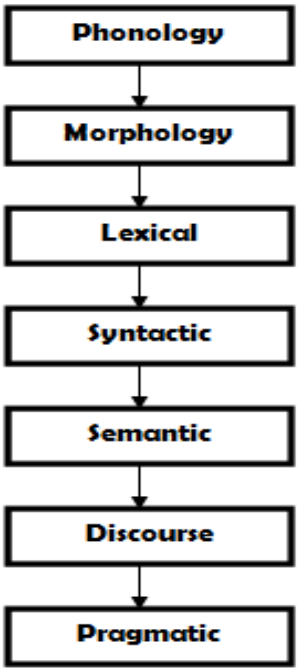

Fig -1 Natural Language Processing.

2.3 Knowledge Base

A knowledge base (KB) is a technology used by a computer system to store complex structured and unstructured information. The initially it was used in connection with expert systems which were the first knowledge-based systems.

The knowledge base is an important part of a chatbot. All the important data that the chatbot processes and requires in order to interact with the user is kept in the knowledge base of that chatbot.

3. PROPOSED SYSTEM

The aim of career counselling bot is to carry out a conversation between both human and machine. Some knowledge has been embedded into the machine so that it identifies the sentences and making a decision itself as response to answer a question. The response principle is to extract the tokens from the sentence process on that find the goal of sentence by matching the input sentence from user.

This system can be used by any user who is confused about choosing the future career or anyone who wants to know what career they should choose that would be beneficial for them in future. The bot will help the users who have passed SSC and HSC to select their field of interest or a field that would be best for them in order to build up their future.

Advantages

- This system will help the user by answering the career related queries.
- User does not have to follow standard format while asking any queries.
- The built in artificial intelligence system will carry out all the processing to give suitable answers to the user.
- System uses a graphical representation of a person speaking while giving answers as a real person would do.
- In future reference we are trying to implement our system that will cover all the career fields.

4. METHODOLOGY

4.1 Algorithm

- First system will take input from user either in text or speech or voice format.
- The Voice format will be converted to the text format and the text format will be considered as it is.
- Process the received queries using the response generation module which makes use of a data repository.
- Search in Database appropriate answer.
- Display result in Speech as well as in Text.

4.2 Module

1. Bot Chat

Users can chat with the bot as if talking to a real career counsellor. This part is the core part of our chat bot system. The artificial intelligence technology is new as well as it will help us to create various interactive system. The same program can be used to build similar concept bots in future.

It is very difficult to make decision on user's query but it is become easier because of the intelligent system. This part of the bot processing accepts the input in text form and process the result and then it will reply back to the user.

2. Text to Speech

The bot also speaks out the answer. Our system will also give output in both format text as well as in voice. Main benefit of audio output is, it is more understandable to user rather than read output[5].

3. The Processing

User ask question get process according to bot knowledge database first and suggest the best field according to user abilities, scope of that field, activity or suggestion to improve your ability .

The Android platform provides interface between user and bot that let you input your questions and provides data. It is just like a chatting application we can give the input through voice and by typing too, Output also on both ways. This application work is very simpler because the knowledge already programmed in advance. One of methods used in this application is to match the pattern (pattern-matching). The bot would match the input sentence from the speaker or user with pattern that has existed on the knowledge. Each pattern paired with the knowledge of bot which taken from various sources. The input sentence prepared as the materials of chat pattern. The chat patterns modelled in the pattern-template stored in a relational database management system (RDBMS) tables. Sentence similarity measurement scores are used for pattern matching.

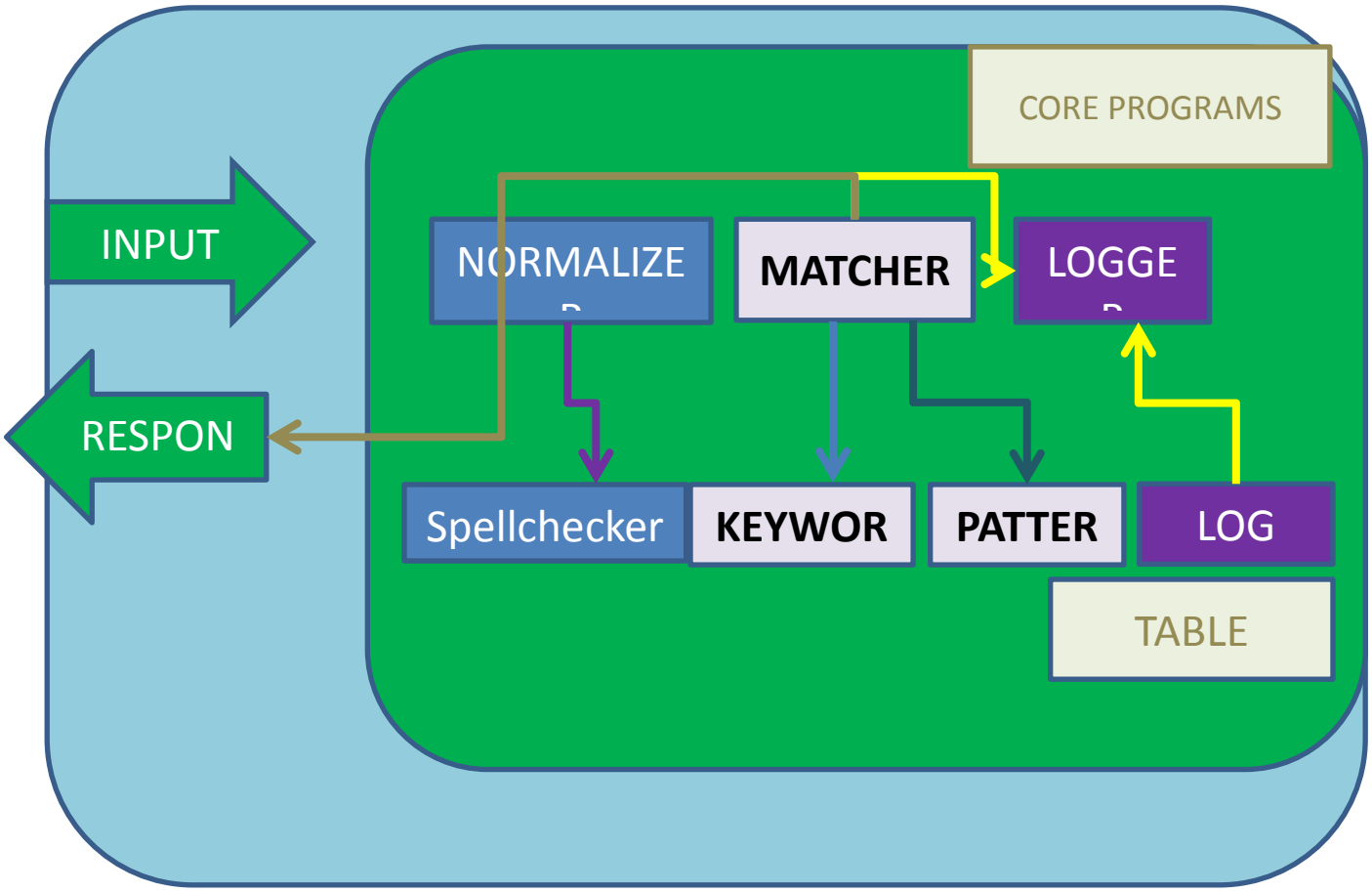

Fig -2 Core Function.

4.3 Flowchart

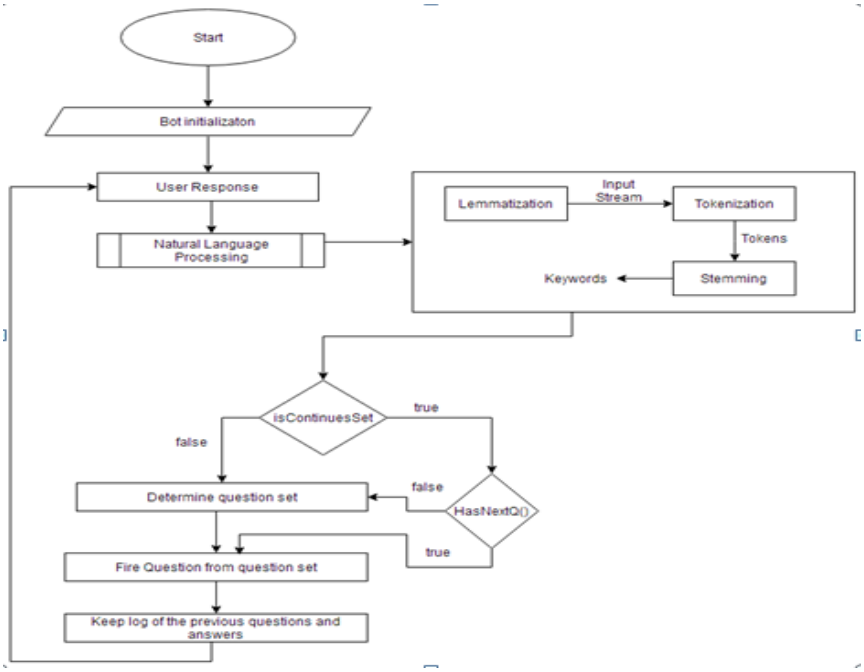

Fig -3 Working Flow.

The working of the Career Counselling bot is explained in the fig. 4.1. The chatbot works on the user data to give output to the user using various artificial intelligence algorithms and scan the knowledge base of the chatbot so that an appropriate output is given to the user as the user needs it.

The career counselling bot is basically a bot the helps users in deciding their career for their future. This chatbot user interface looks as a basic chat application. This bot processes the user queries. Firstly the chat bot tries to get basic information from the user which include their qualification, their interest, hobbies with the help of which the bot asks questions from the question sets that are defined in the knowledge base of the chatbot. If the chatbot get appropriate answer to the question then the further processing in that question set and its related other question sets are used to ask questions to the user, or else other sets are referred till the bot gets the appropriate career to the user. These question sets are designed in the form of a career chart that shows how that particular career can be chosen following the interest of the user.

5. CONCLUSION

This research paper proposes an intelligent chat bot system for career counselling, which will help user in choosing the right career by giving an appropriate response to user's query. It is an intelligent system that will think like human beings. This system will be helpful in reducing stress of the students. Due to an accurate knowledge base, quick answers will be given to user. ICCB system will take both voice or text as an input.

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