Artificial Intelligence Chatbot using Python

[1]Prof. Rashmi Tundalwar, [2]Aditya K. Kshirsagar, [3]Bhagyesh S. Patil, [4]Rushikesh P. Wankhade

[1]Assistant Professor, Department of Computer Engineering, Dhole Patil College of Engineering, Kharadi, Pune, India.

[2,3,4]U.G. Student, Department of Computer Engineering, Dhole Patil College of Engineering, Kharadi, Pune, India.

Abstract : A chatbot is a conversational agent where a computer program is designed to simulate an intelligent interaction. It can take user input in many formats like text, sentiments, etc. For this purpose, many open source platforms are available using python. Artificial Intelligence Markup Language (AIML) is derived from Extensible Markup Language (XML) which is used to build up a chatbot artificially. In this paper, we use AIML interpreter for the generation of the responses of users input. We have used this method for developing an android application and web application chatbot which will interact with user using text.

Keywords: Artificial Intelligence, Chatbot, Web Application, AIML.

I. INTRODUCTION

Over the last few years, Chatbots have played an important role as human-computer interfaces. Chatbots are generally composed of three units: the user interface, an interpreter, and a knowledge base. Laven [6] defines Chatbot as a program that attempts to simulate typed conversation, with the aim of at least temporarily fooling the human into thinking they were talking to another person. Basically, chatbot is a conversational agent that can communicate with user in a given subject using the natural language. Many chatbots have been deployed on the internet for the purpose of customer service site, guidance, entertainment and education. Existing popular chatbots are ALICE [2], SimSimi and Cleverbot. Artificial Intelligence Markup Language (AIML) is derived from Extensible Markup language (XML) which is used to build up a chatbot artificially. The AIML based chatbots are famous because they are light weighted, easy to configure as well as at minimum cost. AIML has class of data objects called AIML object which describes behaviour of computer programs. In our paper, we have used program which is an open source AIML engine written in PHP. It is an interpreter for the AIML scripts of the chatbot. It uses relational database(MySQL) to store the chatbot details. Also, we are storing all the AIML scripts to the database. When user sends message to the chatbot program, then according to that matched reply from the AIML, the answer is formulated and send back to the user. It can be directly installed on a local server under the GNU General Public License.

II. LITERATURE SURVEY

[1] Emanuela Haller and Traian Rebedea, "Designing a Chat-bot that Simulates an Historical Figure", IEEE Conference Publications, July 2013. There are many applications that are incorporating a human appearance and intending to simulate human dialogue. But in most of the cases the knowledge of the conversational bot is stored in a database formed by a human experts. However, very few researches have investigated the idea of creating a chat-bot with an artificial character and personality starting from web pages or plain text about a certain person. This paper describes an approach to the idea of identifying the most important facts in texts describing the life (including the personality) of an historical figure for building a conversational agent that could be used in middle-school CSCL scenarios.

[2] Maja Pantic, Reinier Zwitserloot, and Robbert Jan Grootjans, "Teaching Introductory Artificial Intelligence Using Asimple Agent Framework", IEEE Transactions On Education, Vol. 48, No. 3, August 2005. This paper describes a flexible method of teaching introductory artificial intelligence (AI) using a novel, Java-implemented, simple agent framework developed specifically for the purposes of this course. Although numerous agent frameworks have been proposed in the vast body of literature, none of these available frameworks proved to be simple enough to be used by first-year students of computer science. Hence, the authors set out to create a novel framework that would be suitable for the aims of the course, for the level of computing skills of the intended group of students, and for the size of this group of students. The content of the introductory AI course in question is a set of assignments that requires the students to use intelligent agents and other AI techniques to monitor, filter, and retrieve relevant information from the World Wide Web.

[3] Jiyou Jia, "The Study of the Application of a Keywords-based Chatbot System on the Teaching of Foreign Languages", This paper reports the findings of a study conducted on the application of an on-line human-computer dialog system with natural language (chatbot) on the teaching of foreign languages. A keywords-based human-computer dialog system makes it possible that the user could chat with the computer using a natural language, i.e. in English or in German to some extent.

[4] Robert P. Schumaker, Ying Liu, "Evaluating mass knowledge acquisition using the ALICE chatterbot: the AZ-ALICE dialog system", In this paper, we evaluate mass knowledge acquisition using modified ALICE chatterbots. In particular he investigate the potential of allowing subjects to modify chatterbot responses to see if distributed learning from a web environment can succeed. This experiment looks at dividing knowledge into general conversation and domain specific categories for which have selected telecommunications.

[5] Bayu Setiaji, Ferry Wahyu Wibowo, "Chatbot Using A Knowledge in Database Human-to-Machine Conversation Modeling", The sentence similarity calculation in this paper using bigram which divides input sentence as two letters of input sentence. The knowledge of chatbot are stored in the database. The chatbot consists of core and interface that is accessing that core in relational database management systems (RDBMS). The database has been employed as knowledge storage and interpreter has been employed as stored programs of function and procedure sets for pattern-matching requirement. The interface is standalone which has been built using programing language of Pascal and Java.
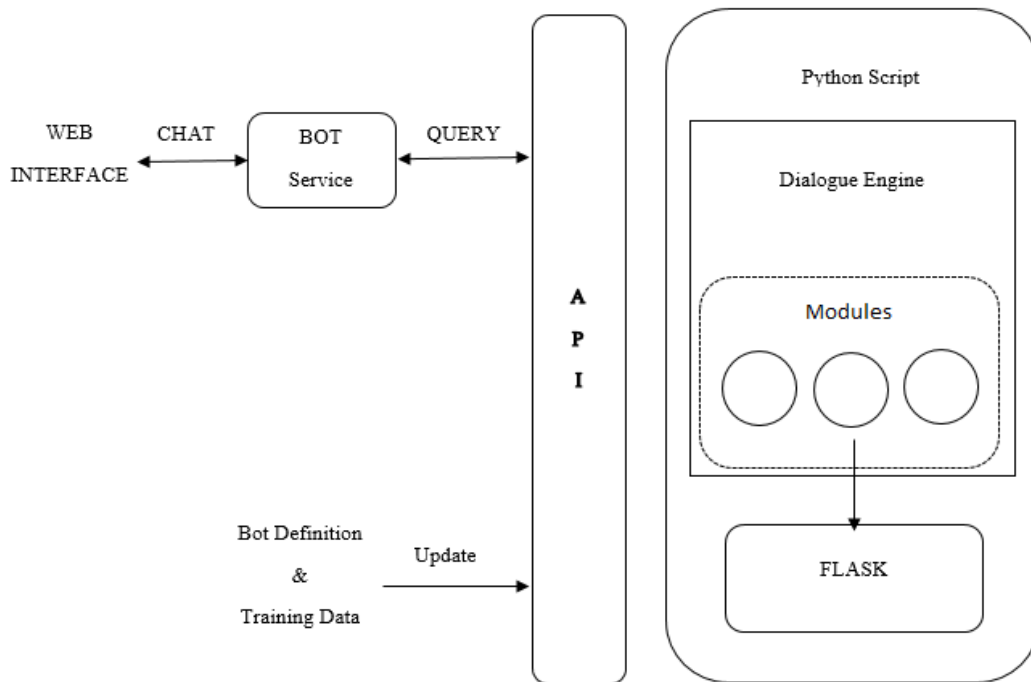
III. PROPOSED SYSTEM

Fig 1. Proposed architecture

The system process user's query and understands what he wants to convey and simultaneously answers them appropriately. The questions asked by the users can be in any specified format. There is no specific method for users to ask questions. The built in artificial intelligence system understand users requirements and provides suitable answers to the user.

IV. AIML PROCESS

To build a Chatbot, a flexible, simple to understand and universal language is needed. AIML, a derivative of XML is mostly used approaches that satisfies the requirements. AIML represents the knowledge put into Chatbots and is based on the software technology developed for A.L.I.C.E. (the Artificial Linguistic Internet Computer Entity). It has the able to characterize the type of data object (AIML objects) and describe partial conductance of the programmers that it processes. These objects consist of two units: topics and categories; the data contained in these categories is either parsed or unparsed.

The purpose of the AIML language is to simplify the job of conversational modelling, in relation to a "stimulus-response" process. It is also a mark-up language based on XML and depends on tags which are the identifiers that make snippets of codes to send commands into the Chatbot. The data object class is defined in AIML as an AIML object, and the responsibility of these objects is modelling conversational patterns. This means that each AIML object is the language tag that associates with a language command. The general structure of AIML objects is put forward by:

<Command> List of parameters < /Command>

The most important object among the AIML objects is category, pattern, and template. The task of the category tag is defining the knowledge unit of the communication. The pattern tag identifies the input from the user and the task of template tag is to respond to the specific user input [20]; these are the most used tags and the bases to design AIML Chatbots with an intelligent response to natural language speech conversations. The structure of category, pattern, and template object is shown below:

```
<category>
    <pattern> User Input</pattern>
        <template>
            Corresponding Response to input
        </template>
</category>
```

AIML Algorithm:

Step 1: The system reads the question and splits the whole data into chunk of sentences by tokenizing () it.

Step 2: Initially, it analyzes the first sentence, reads the first and the last word of the sentence and counts the number of words in the sentence.

Step 3: It matches the AIML pattern with the first or the last words, and filters all the irrelevant pattern matches.

Step 4: It tracks a score for the pattern and word matches i.e. whether the pattern is fully matched, common word match, default match, etc.

Step 5: According to the scores of the pattern, it finds out if the pattern belongs to an AIML category.

Step 6: It then initializes the sentence, matches the pattern, builds a nouns and verb list and accordingly generates a reply.

Step 7: The procedure repeats until all the sentences are parsed and a reply has been generated.

V. STRATEGIES

To give suitable answers to keywords or phrases extracted from speech and to keep conversation continuous, there is a need to build a dialogue system (programme) called a chatbot (Chatter-Bot). Chatbots can assist in human computer interaction and they have the ability to examine and influence the behaviour of the user by asking questions and responding to the user's questions. The chatbot is a computer programme that mimics intelligent conversation. The input to this programme is natural language text or sentence, and the chatbot application should give an answer that is the best intelligent response to the input sentence. For building a chatbot needs highly professional programming skills and experienced developers to achieve even a basic level of realism. There is a complicated development platform behind any chatbot which will only be as good as its knowledge base which maps a user's queries into the most appropriate response. The chatbot developer usually builds the knowledge base as well. However, there are some platforms which provide a learning environment. Writing a perfect chatbot is very difficult because it needs a very large database and must give reasonable answers to all interactions. There are a number of approaches to create a knowledge base for a chatbot and include writing by hand and learning from a corpus. Learning here means saving new phrases and then using them later to give appropriate answers for similar phrases

VI. Result
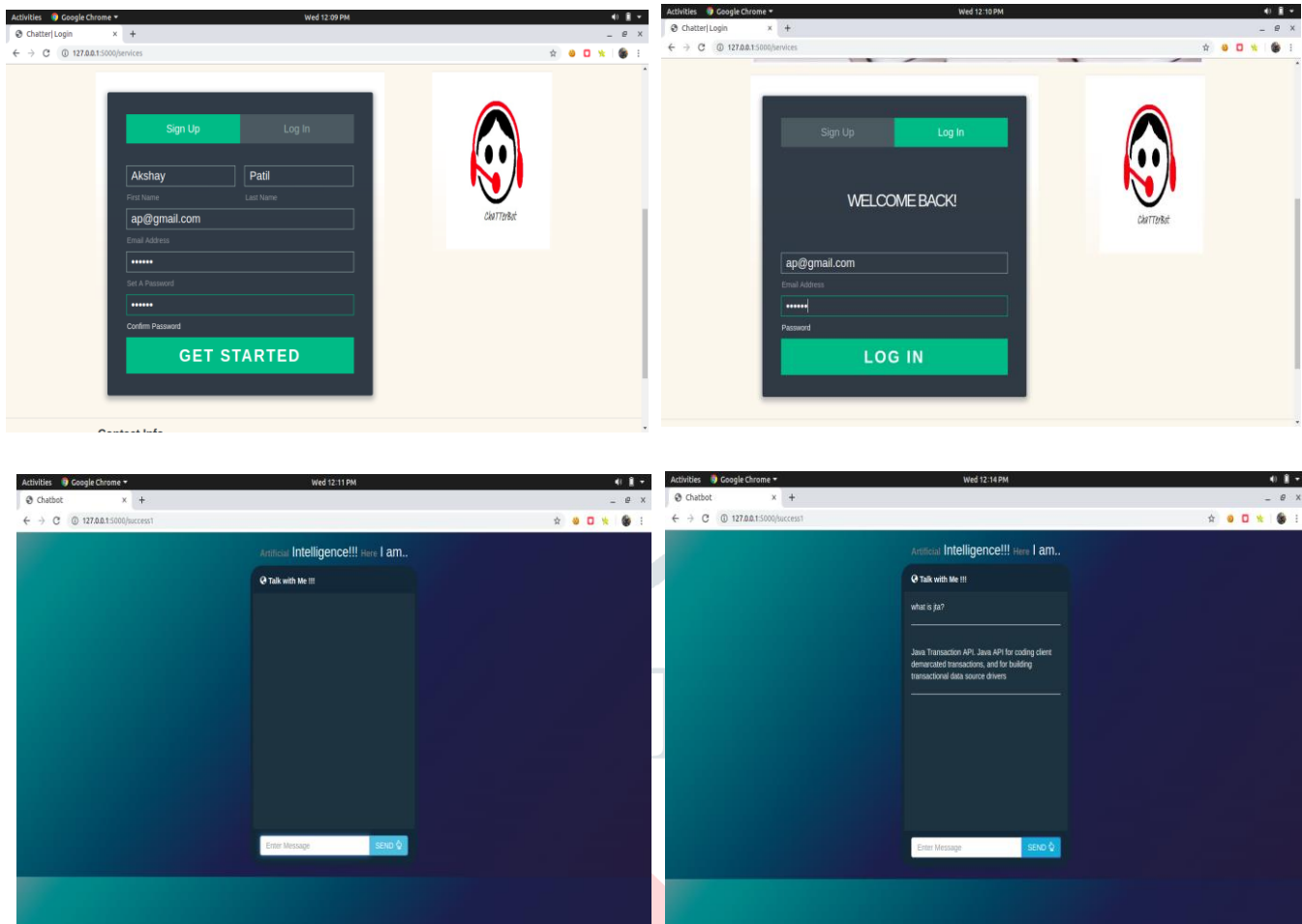
VII. CONCLUSION

The computer users are becoming more dependent on the machines. The chatbot uses artificial intelligence and hence will learn the responses of the users resulting in increasing efficiency. Chatbot has ability to respond like human being hence will reduce extra efforts are required to be done by humans.

Nowadays, Chatbots have limited language efficiency. They unable to support multiple languages, dialects and do not understand colloquial usage. Hence there is a great scope for removing such language barriers in future chatbots. Also, AIML templates could be improved to include more variations for the same input.

REFERENCES

[1] Emanuela Haller and Traian Rebedea, "Designing a Chat-bot that Simulates an Historical Figure", IEEE Conference Publications, July 2013.

[2] Maja Pantic, Reinier Zwitserloot, and Robbert Jan Grootjans, "Teaching Introductory Artificial Intelligence Using Asimple Agent Framework", IEEE Transactions on Education, Vol. 48, No. 3, August 2005.

[3] J. Jia, "The Study of the Application of a keywords-based Chatbot System on the Teaching of Foreign Languages."

[4] Robert P. Schumaker, Ying Liu "Evaluating mass knowledge acquisition using the ALICE chatterbot: the AZ-ALICE dialog system"

[5] Bayu Setiaji, Ferry Wahyu Wibowo "Chatbot Using A Knowledge in Database Human-to-Machine Conversation Modeling"

[6] R. Moore, G. Gibbs, "Emile:Using a Chatbot Conversation to enhance the learning of Social Theory" Univ. of Huddersfield, Huddersfield, England,(2002)Ausburg, Germany, University of Ausburg. 2002.

[7] Weizenbaum, J. 1966. ELIZA- A Computer Program for the Study of Natural Language Communication between Man and Machine, CACM 9(7), 36-43