Intelligent Chatting Service Using AIML

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Abstract— **This paper describes the development of chat bots hosting service. One user can host multiple chat bots using any of the available AIML templates on the website which may reassemble a personality or act as consumer care for any business, organization or institutions. Moreover, this hosting website also provide API's for Weather, News, Dictionary, web encyclopedia, Mathematical Calculations and much more and a global file to keep all bots updated that are hosted on the website. Users can also embed chat on their personal website or integrate it with social networking sites such as twitter.**

Keywords—Artificial Intelligence, Chatting Bot, AIML, Bot Hosting Website, Bot Templates

I. Introduction

The evolution of robots has made a drastic change to the human life. One of the most emerging trend in the development of robotics is Chatting robot. Abundant number of researches have been performed in order to develop chat bots which can prove to be realistic or to mimic human communication skills.

There are numerous websites available on World Wide Web which helps to host our personalized chat bot that can respond intelligently to human queries. These services are used by many industries, organizations or institutions to service their consumers. One of the most widely used language for the development of bot is AIML (Artificial Intelligence Markup Language). This proves to be a deterministic language in terms of development of chat bots. Almost all bots are developed using AIML in which all the possible queries are enclosed in <pattern> and <template> tags which contains question and answer respectively.
E.g.   <pattern>HOW ARE YOU</pattern>
       <template>Yeah! am fine. How are you?</template>

The patterns and template tags are further enclosed in <category> tags. Thousands of categories tags are used to develop chatting bots. The free A.L.I.C.E. AIML includes a knowledge base of approximately 41,000 categories. [1] are These categories are saved in database when the bot is compiled or published. When a user sends a message the query pattern is matched with the pattern's stored in database and the corresponding template is sent as a response to the user.

More researches in this domain resulted into usage of speech recognition and text to speech converters. So, beside text chatting, voice chatting also become possible with intelligent bots. Moreover, the foreign language enhancements also came into existence. Beside English, bots can be developed in many other foreign languages such as Chinese, Nepali, Malayalam, French, Hindi etc.

But unfortunately, AIML limits the bots to perform mathematical calculations, provide information about weather, news, recent updates etc. Or it needs to be keep updating on a regular basis to provide such information. This create a tremendous problem for bot developers and eventually restricts the ability of machines to replace humans. This is the major problem addressed by this paper.

Second major problem with current system is it takes tremendous time to match the query string with pattern from huge database. So, the performance decreases and eventually, the response time of bot decreases.

This bot hosting website provides a solution for both the major flaws in the existing systems. Since this website is a bot hosting site, it contains all the API to necessary provide information about weather, news, mathematical calculations, general knowledge etc. Moreover, it creates a log of frequently asked queries and store it to the server. This increases the performance of the bot. The response time gradually decreases for the questions that are being frequently asked.

Bot skilled with ability of performing mathematical calculations and providing information about recent trends brings a great revolution in the development of chatting bots. Users does not need to constantly keep on updating their bots for general knowledge since this work is done directly at the server, it's benefit can be availed by all the bots hosted on this website.

II. Literature Review

This chapter gives a brief summary about all the researches done until now. It also abstracts all research papers related to Chatting Bots that have conducted till now with their technology used, enhancements in previous technology but the hurdles that the users are facing. Consequently, this formulates the problem statement of this project which explicates bot development and performance issues and proposed architecture to surmount it.

A. AN INTELLIGENT WEB-BASED VOICE CHAT BOT [2]

This paper deals with the working of AIML based chat robot. A Java Program is developed which convert AIML files into database. This program is embedded into website which can in turns help its customers to develop bots.

The major technological enhancement in this research is integrating speech recognition and text to speech converter. This empowers the bots to respond to user queries using voice instead of text and humans to chat with bots using voice instead of text messages.

B. Chinese Intelligent Chat Robot Based on the AIML language [3]

This paper explains the language enhancements in the field of Chatting Bot Development system. Here, the bot developed is in Chinese Language known as Chinese Intelligent Chat Robot Xiao Hui-hui.

This major technological enhancement in this research paper is language enhancement that AIML can be used not only to develop bots in English Language but also in many other foreign languages such as Chinese, Japanese, Indonesian, Hindi, Marathi etc.

C. Engaging High School Students Using Chatbots [4]

This paper presents a software platform called Chatbots designed to foster engagement while teaching basic Computer Science concepts such as variables, conditionals and Finite state automata, among others.

There are two templates used to create Chatbots:
- A bot that contain Computer Science concepts in it which can be helpful in training students.
- Class 15-lesson pilot course in 2 high schools.

This paper described the use of Templates to develop Chatbots which simplify the creation of bots and saves a lot of customer's time.

D. Development and Implementation of a Chat Bot in a Social Network [5]

This paper describes the linking of chat bot with social network. It describes that how a chat bot can be linked with Twitter to entertain the users. It can also be used for advertisements. The bot is linked with Twitter since it parts from a simple concept, the exchange of short messages no longer than 140 characters which drastically reduces the amount of information and the way it is published.

The algorithm process in this bot is divided into three different parts:
- Message reception.
- Message processing.
- Generation of a suitable reply.

III. METHODOLOGY

Performance is the main concern while developing this project. Various techniques have been used to develop this project efficiently so that it can help users to develop and host their bots. This chapter explains the various UML diagrams for understanding the workflow and sequence of the actual project process in depth internally.

A. Use Case Diagram

Chatting bot Service provider consists of two main actors; user and admin. User can register themselves on the website and login to the site. Users can create Chatbots using any of the available templates. These Chatbots can be embedded with any social media chatting application or any personal website. Whenever any person asks a query to the bot. The bot will search for the respective pattern a generate a response.

For chatting bot to stay completely updated, admin can keep updating global bot file so that all the hosted bots get automatically updated. All the individual bots need not be updated manually as shown in Fig. 1.
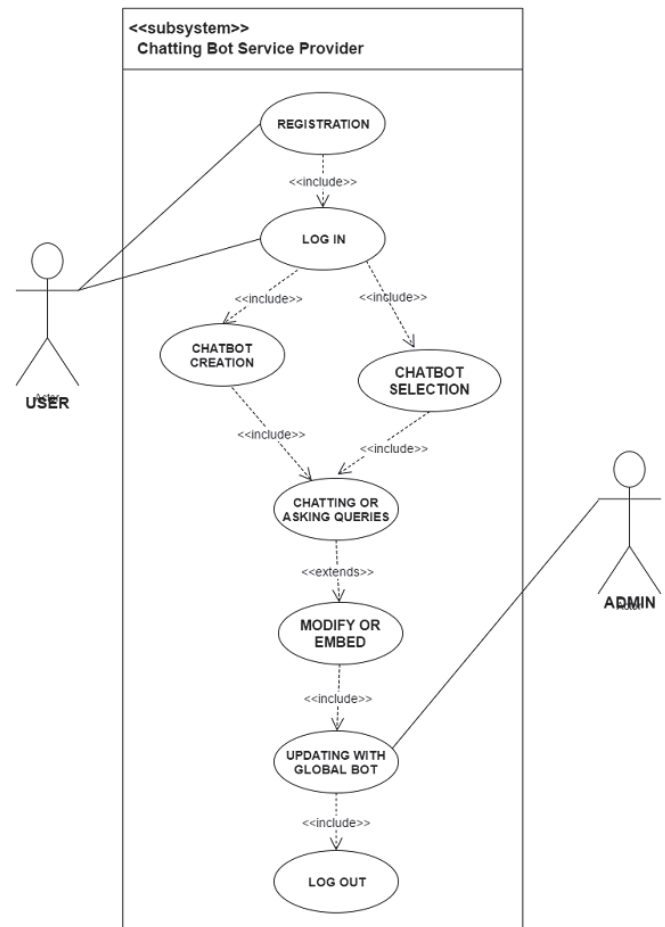

Fig. 1: Use-Case Diagram of Chatting Bot

B. Activity Diagram

Activity diagrams explicates all type of flow control by using different elements.

Once the user enters the login details then web server will check whether the entered details are valid or not. If its valid then website's user panel will be visible. After this, users will be having choice whether to develop their own chatbot from scratch or to use template available on website that designers have provided for ease of making chatbots. Users can upload their AIML files on their bots.

Our service also contains a global update facility. This is possible by the means of a global AIML file and a global AIML property file. If any update is required globally, the webmaster will update the global files and all the bots hosted on the website will be automatically updated.as shown in Fig. 2

Once all the AIML files and local and global are updated successfully, client of the user can interact with the developed bot by searching in our websites bot list or by API used to integrate user's bot on their personal website
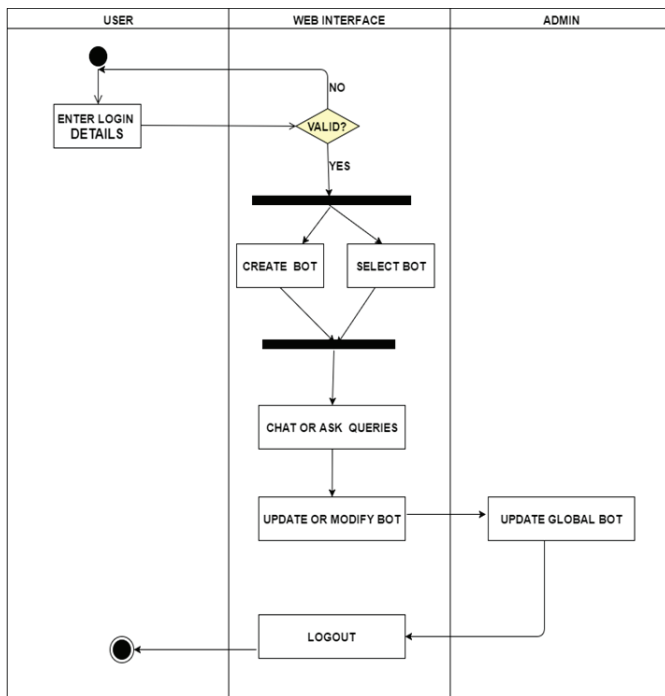
Fig. 2: Activity Diagram

Fig. 3: System Architecture

C. System Architecture

The performance of the chatting bots becomes excellent if the architecture is designed well. As explained in Fig. 3; System Architecture comprises of web server which stores the AIML Files created by the members of website. These AIML Files are converted into Database format and are stored into Database. Whenever user log in to the website a list of templates is visible to the member which help to create a personalized bot on our server. Member can select a template of his choice and start developing his bot with the help of instructions provided on our website.

After successful creation of a bot user can publish his bot. The AIML files of these bot are stored in AIML Database and these files are converted into queries and are stored into database and the bot gets ready to response end-users requests.

An API is provided to the members of website so that they can embed this bot on their personalized website or integrate it with any social networking website such as Twitter. Whenever end-user wishes to communicate with a bot, the bot is searched in the chat engine. Chat Engine contains a complete database of all the bots developed or published on the website. Through this chat engine the intended bot's chat box is visible to the end user.

When end-user sends a message to the bot, again it is searched in chat engine. Chat engine contains a global properties file so that it can respond if the message is about general knowledge, weather or news based and the response is directly generated by the global bot. This response might be generated by the global bot itself or by sending a SOAP message. If the response is not available to the global bot, it is searched in the natural bot or the intended bot. The database is searched for the available response for the asked query. The response for the same is generated by if the query is matched in the database.
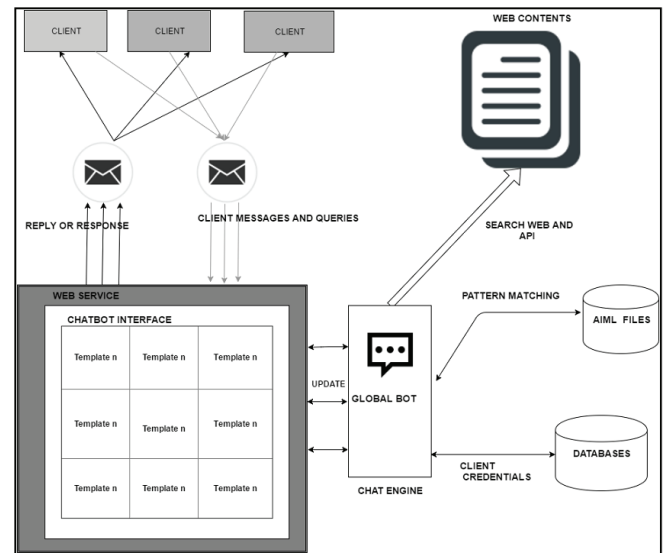
IV. CONCLUSION

Chatting bot service provider acts as a customer care for many organization / institutions / industries etc. or it may act as a personal assistant to all the people of the world. Bots developed on our site can also help to remember many things. It may also help in attracting customers nationwide for many companies. It can also be used to entertain people by sending them jokes, facts, quotes etc. whenever they are bored. At the top of all performance in the main concern while developing our project so that it can service millions of customers at a single moment of time.

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