Design and Evaluation of a Conversational Agent for Natural Language Processing in An Android Application

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Abstract: This paper focuses on the design and evaluation of Chatbot, a conversational agent for Natural Language Processing in An Android Application featuring a high number of different, unique characteristics: context dependent information, an support for different kind of dialogue types, i.e. chat, specific and general question answering, task oriented dialogues. The agent has currently implementations: as mobile phone application. ChatBot is an application that helps users and agents communicate easily with each other. It helps in maintaining a direct connection between users and agents. However, before this application, users get so many problems in getting their answers from the agent. The market is a communicative agent. There is no proper work done either. The user has to give their name and email address so that they can get the answer to their question and then the user gets the answer of their query after 24 hour via mail. And the information users want are either given from Google or given a link to it.so this conversational agent are easy to use. The query that the user put it will be given the correct answer to the same time or at a time. No matter how many people are logged into the questions, they will automatically get all the answers at the same time. We have set up a data set. Currently built for a one domain, we can work on this Multiplayer domain. The paper describes the modules and resources required for running the agent on both interfaces, as well as the evaluation results obtained from two assessment studies concerning the interaction design of these two agent interfaces. The feedback gathered from the studies will enable us to improve the applications in terms of service, performance and usability.

KEYWORDS: Chat-bot, Conversational Agent, Namah, Android, Artificial, Intelligence Markup Language.

I.INTRODUCTION

The application we created is called chatbot and it is also called conservation agent. The conservation agent is the one who will give the user an answer to their question. This is an application that gives the user the right answer of their question at a time without any faults. This is the application that will work without any internet. First we will work this application like a demo purpose or a practical domain. After this we will work further as well as create multiple domains which will be used in restaurants, hostels, schools, colleges, hospitals etc. The number of chatbots that are in the market does not work properly. The chatbot that's in the market they firstly asks the user for their email address, there name and there number. Then after 24 hours the user gets the answer to their question by email. But this is the chatbot which is the same time user gets the right answer to his question. This application is free of cost and it will work without internet. This is an easy way for a user to get an answer to their question without wasting time. It does not require any email address or number. The user can use this application without being anxious. There will be no problem with the user simply user has to ask his question. There is only one language in this application, but in Hindi and Punjabi it will also be in the future. Android based Conversational agent can interact with the user after understanding the requirement of user. So instead of a human on one side replying to the queries of another side the Conversational agent reply to the queries of the user. Conversational agent uses what are called neural networks, vast networks of machines that approximate the web of neurons in the human brain. It is a software application that runs automated tasks over the Internet. Traditionally chatbot performs tasks that square measure straightforward and structurally repetitive, at a far higher rate that's doable for an individual's alone. Chat larva may be a style of interactive agent, a computer virus designed to simulate associate intelligent spoken communication with one or a lot of human users via text and chat interface. The system provides precise output to its users even if minor spelling mistake is there. Moreover the parsing of sentences avoids sending to the system words that do not form a pattern. Conversational agent is essentially supported the interaction between the users and agents. UN agency move through this humanoid application and acquire feedback instantly. This informal agent application is employed by the users over one at identical time. The AIML is build affiliation in between the humanoid and informal agent. AIML stands for computing language. informal agent helps the users to resolve their issues simply through the assistance of informal agent application. this method conjointly give the power of correct the orthography mistakes if occur in spoken communication between the users. This method is exclusive from others with their feature of security. AIML stands for Artificial Intelligence Markup Language, but this is just simple XML. AIML is an XML based markup the language was meant to create an artificial intelligent application. In the artificial intelligence field, a conversation agent Refers to a system that allows natural conversations With one or more ways with humans, e.g. Text, Speech, visual content, graphics, gestures, etc. Conversational Agents are able to provide face expression, emotions, turn??? Tacking, visualization of structured material, emphasis, Orientation, context, personalization, etc., enriched User experience with system.

In addition to the Internet north-engine, currently Internet launches many applications of chat-boot or Known as Chatbot, which is often targeted for such purposes or Just entertainment. This app work is very easy because knowledge has already been programmed.

II. ARTIFICIAL INTELLIGENCE MARKUP LANGUAGE

Artificial Intelligence Markup Language (AIML) is derivation of Extensible Markup Language (XML). It has class of data object called an AIML object which describes the behavior of computer programs. It contains of units called topics and categories. Categories are basic unit of knowledge in AIML. Each category consists of pattern which contains input and template which contain answer of chatbot. Besides, there are containing some optional context called "that" and "topic". <that>contain chatbot last utterance and <topic>contain a collection of categories together.

AIML consists of words, underscore symbols and wildcard symbol like _and *. It is also case invariant. There are three type of categories.

- Atomic categories: These categories are those patterns whose have no wildcards.
- Default categories: These categories are those patterns whose have some wildcards _like *. They have to match any input but differ with their alphanumerical order.
- Recursive categories: These categories are whose having <srai>and <sr>tag which simply refer to recursive and symbolic reduction.
1) **Symbolic Reduction:** It reduces complex grammatical forms to simpler ones.
2) **Divide and Conquer:** It split an input into two or more subpart and combines the response to each.
3) **Synonyms:** It returns similar answer in a pattern for nearest user pattern of it.

A. Preparation of Pattern Matching

Before beginning pattern matching rule, every input to the AIML interpreter should taste 2 processes.

• **Normalization Process:** It is concerned in three phases. Substitution standardization could be a heuristic applied for associate degree input that tries to retain data within the input. Otherwise, it might be lost throughout sentence ripping or pattern fitting standardization. In Sentence ripping standardization, the sentence is split into 2 or a lot of sentences victimization "break sentence at periods" rules. Then, In Pattern fitting standardization, It removes punctuation from the input and converts it great.

• **Producing Input Path:** Normalized-Input T value P-value. Input path has 3 components. First, half is named Normalized Input. Then, tag followed by T value that holds previous root answer and tag followed by P-value that holds topic name if it exists cubic content unit * otherwise.

B. Pattern Matching Algorithm

AIML interpreter tries to match word by word to achieve longest pattern matching and take a look at to search out that the most effective one is. This behavior may be represented with Graph master set of files and a directory containing a group of nodes that is named node master and branches represents initial words of all patterns and wildcard symbols.

III. Result

In This Screenshot User Can Query.eg. What is your name?

In This Screenshot Chatbot response the users query. E.g. My Name is namah.

IV. CHATBOT BENEFITS

NLP powered chatbots offer great promise for customer savings, and even greater advantages when it comes to costs. Here is a snapshot of other benefits:

- **Immediate assistance**: Chatbots never sleep and never put you on hold! They are available 24 hours a day, seven days a week for real time interaction.
- **More efficient service**: Chatbots can find the precise answer customers need in any connected knowledge base.
- **Human-like engagement**: Like a human assistant, the chatbot offers a personalized, one-to-one experience, in a conversational style.
- **Cost and time savings**: Chatbots can handle many questions without human intervention, and allows operators to focus on more complex activities.

Chat bots are searched for the convenience of users and customers, who are known as the objectives of Namah Topic and Conversation Agent. These Chat Bots users can get answers directly from agents without any delay and inconvenience. However, before this Chatbot users get so many problems in getting answers to their questions because the agent did not respond immediately. Agent takes so much time to respond to customers but now, the talkative agent's subjective and objective aspect provides direct answer facility and save users time. In this research and analysis for my best knowledge in this project, it has been stated in this research that not all Chatbots in the current market do not answer the user's answers correctly. To overcome this, worked in this project to improve it so that the user can easily use it with complete satisfaction. It created a data set for it and trained the chatbot in such a way that it would answer the questions of all users accurately. The conversation agent is basically based on the interaction between users and agents. First of all, in developing this application by developing the conversation agent "chatbot" in Android studio. This negotiating agent application works easy. Then with the help of artificial intelligence, the data sets were used in this project in which we put all the questions. With the help of user queries, this chat agent will answer the application exact. Users in this application will ask their questions through chat option. This project connects all the answers to those questions through the Data Set in the application. Then match the questions with the answers and the exact result will be provided by the users. This app will make the user experience easier and they will easily get their answer and feedback. There is no chatbot in today's market that can answer the user's exact answers. That's why we will train this chatbot in such a way that it will first be able to read and understand the user's query and then give an accurate answer. It does not matter which language users are asking for a query, it will respond in the same language in which users are asking for queries. We are currently working on a single domain. But later it will be available to work in hotels, hospitals etc. The conversation agent is basically based on the interaction between users and agents. Who interacts with this Android application and receives immediate feedback. This conversation agent has used more than one user at the same time. AIML is making connections between Android and Conversation Agent. AIM stands for artificial intelligent markup language. The conversation agent helps users solve their problems easily with the help of a chat agent. This system also

provides the ability to correct spelling mistakes when in conversation between users. This system is unique with the convenience of others. The chatbot is the application which helps the users and agents to communicate with each other in easy manner. It helps in direct relation between users and agents. However, before this application users face their responses from agent. Now, I develop a chatbot application to provide users with comfort. Users can send questions directly to the agent and get an immediate response from the agent. I developed this app in Android studio for questions. Users can send their questions to chat options and the agent can easily send feedback so this question and answer are converted into conversation. For these questions I used the data set in which I kept all the questions. This chat agent application will answer the exact answers with the help of user queries. These days, there is not so much chatbot in the market. So, my ChatBot application will give users easy experience and easy feedback. A chatbot is a conversation agent where a computer program is designed to emulate an intelligent conversation. It can take user input in many formats like text, voice, emotions etc. For this purpose, many open-source platforms are available. The market is a communicative agent. There is no proper work done either. The user has to give his /her name and email address so that he/she can get the answer to his/her question. The user has to give their name and email address so that they can get the answer to their question and then the user gets the answer of their query after 24 hour. And the information users want are either given from Google or given a link to it.so this conversational agent are easy to use. The query that the user put it will be given the correct answer to the same time or at a time. No matter how many people are logged into the questions, they will automatically get all the answers at the same time. We have set up a data set. Currently built for a one domain, we can work on this Multiplayer domain.

V. CONCLUSION

In this paper, the information collected from research, each has the strongest points and weaknesses Identified and a list of desired features that should be in the system. after all The conclusion was that the combination of keywords should be a combination of the system String Similarity Algorithm, a customized Google search option and a spell checker, logs and Response functionality. Apart from this, an administrative part should be made where Administrators will be able to add, update and delete information related to the system. We illustrate some integrated systems which are added AIML based chatbot to their system to make interaction with user. Besides, user gets unlimited full time chatting service which make interest user to use this particular service. this ChatBot application will give users easy experience and easy feedback. Users can send questions directly to the agent and get an immediate response from the agent. A chatbot is a conversation agent wherever a computer program is designed to emulate an intelligent conversation. It can take user input in many formats like text, voice, emotions etc. For this purpose, many open-source platforms are available. Currently built for a one domain, we can work on this Multiplayer domain. The paper describes the modules and resources required for running the agent on both interfaces, as well as the evaluation results obtained from two assessment studies concerning the interaction design of these two agent interfaces. The feedback gathered from the studies will enable us to improve the applications in terms of service, performance and usability. It will act as a good virtual assistant for perform multi-dimensional analysis. Automaton based mostly good chat-bot" could be a terribly promising system and aims to boost the user and client expertise.

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