

Chatbot for Organizational Related FAQ's

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Abstract - Chatbots have created a buzz in the business world these days. The emergence of chatbots has created a new way of communicating between clients and service providers and innovative method of going about doing business. They are the most efficient automation technology that companies or business use these days, replacing the traditional methods and also making applications and websites a thing of the past. A Chatbot also called as a "Chatter Robot" is a software application that imitates human conversations in its innate format which includes textual material well as oral communication with the help of artificial intelligence techniques. The very exiting trait of the chatbots is that they can acquire knowledge from the past interactions and continuously grow to become intelligent and smarter over time. Generally, Chatbots are of two types rule based and smart machine based. Rule based chatbots are nothing but they have built in responses in a dataset. However, smart machine based chatbots adapt their behavior based on the client interactions. Chatbot has become trendier in businesses nowadays as they can significantly minimize clients service cost and handle a multitude of clients. But as the number of clients increase the load on the system also increases. To rectify this problem, the paper proposes a chatbot, with accurate answer to any questions using simple AIML. General questions like welcome/greetings the answers to these questions will be given using AIML and others using LSA for user satisfaction. This chatbot is a generalized chatbot to answer any kind of FAQs.

Key Words: Artificial Intelligence Markup Language (AIML), Latent Semantic Analysis (LSA), Pattern Matching, Chatbot, Human Computer Interaction (HCI).

1.INTRODUCTION

Nowadays we have webservices like E-Business, Entertainment, E-Shopping, E-Banking, Virtual web assistance and so on. There is a dramatic upsurge in the area of information processing world, where each and everyone is now linked to the web. It is very convenient to access these services anywhere and at any time. There are a variety of client service available like one-one-one chat, helpline services etc. But to provide assistance for these services by human interaction is not very feasible since it takes a lot of time and effort to answer each and every question of the client. Due to this as the frequency of people increases the waiting time to process the query also increases, which results in poor client satisfaction. One of the most critical goals in the field of Human Computer Interaction (HCI) is the outline of normal and impulsive connection modalities. Particularly, many undertakings have been devoted to the betterment of frameworks to communicate with the client in

a characteristic language [1]. Computer based chatbots are getting more and more trendier as an innovative and effective framework to communicate between human and machines.

In this paper we are using AIML for developing chatbots. AIML is Artificial Intelligence Markup Language (AIML) and Latent Semantic Analysis (LSA) are used for developing chatbots, which are used to construct general queries like what is your name? can I be of service to you etc. This criterion can be used to give random responses for same type query. LSA [3] is a Latent Semantic Analysis, a method of natural language processing where it observes the similarities among words as vector representation.

2. EXISTING APPLICATION

A chatbot is an artificial intelligence application which can start a conversation with a client in a normal day to day conversational language using voice or text through messaging applications, web applications, and mobile software's.

Parry: It is nothing but a is natural language software which triggers the thinking of a overly suspicious people. Their state mind is in consistent misinterpretation of others intentions like they are up to no good, they must be plotting against me etc., and their inquiries into certain areas must be deflected which Parry achieves via a complex system of assumptions, attributions, and "emotional responses" occurring by shifting weights assigned to verbal inputs. Parry was the first to pass the Turing Test - it was in the early seventies, when human interrogators, interacting with the program via remote keyboard, were unable with more than random accuracy to distinguish Parry from an actual paranoid individual.

Jabberwacky: Jabberwacky is an artificial intelligence chatbot. It prompts a natural human chat in a curious and joyful manner. It is very peculiar and it learns. In some ways it imitates the way humans learn language, facts, context and rules. Jabberwacky stores each and everything that everyone has ever said, and tells the suitable thing to say using contextual pattern matching techniques. When speaking it uses all the learnt information to give an appropriate response. There are no rules and is sole dependent on the principles of feedback. This is very different to the majority of chatbots, which are rule-bound and finite. If you speak in a foreign language it will learn it, and respond appropriately if it has enough to go on. It can be taught slang English, word games, jokes and any other form of identifiable language trait.

3. ARTIFICIAL INTELLIGENCE MARKUP LANGUAGE

AIML stands for Artificial Intelligence Markup Language. AIML is based on XML and is used to develop artificial intelligent software's. AIML helps to create human interfaces while maintaining the implementation simple to software, easy to understand and highly manageable.

Types of AIML classes: Atomic categories, Default categories, Recursive categories.

	Tags of AIML	Description of each Tag
a)	<code><aiml></code> <code></aiml></code>	It used for opening and closing of the aiml file.
b)	<code><category></code> <code></category></code>	It gives Unit of Information.
c)	<code><pattern></code> <code></pattern></code>	It gives a pattern to match with the user entered query.
d)	<code><template></code> <code></template></code>	It gives the answer users question.

Example:

```
<aiml>
<category>
  <pattern> HELLO BOT </pattern>
  <template>
    Hello User
  </template>
</category>
</aiml>
```

A. AIML Tags

	Frequently used Tags of AIML	Description of each Tag
a)	<code><star></code> <code></star></code>	It is used to match wild card characters.
b)	<code><srai></code> <code></srai></code>	It is used to match other categories when there are multiple questions with the same answer or vice versa.
c)	<code><random></code> <code></random></code>	It is used to obtain random outputs.
d)	<code></code> <code></code>	It is used for representing multiple outputs
e)	<code><set></code> <code></set></code>	It is used to set Value in an AIML variable.
f)	<code><get></code>	It is used to get value stored in an aiml Variable.
g)	<code><that></code> <code></that></code>	Used in AIML to respond based on the context.
h)	<code><topic></code> <code></topic></code>	It is used to store context so that conversation can be done later on the basis of that context.
i)	<code><think></code> <code></think></code>	It is used to store a variable without letting the user know about it.
j)	<code><condition></code> <code></condition></code>	It is similar to switch statement in a programming language. It helps give appropriate outputs for matching input.

B. Examples for AIML Tags

1. Example for `<star>`:

```
<aiml >

  <category>
    <pattern>I DON'T LIKE
    *</pattern> <template>
      I too don't like <star/>.
    </template>
  </category>

  <category>
    <pattern>B * IS B *</pattern>
    <template>
      How <star index = "2"/> cannot be a <star index
      ="2"/>?
    </template>
  </category>

</aiml>
```

2. Example for `<srai>`:

```
<aiml>

  <category>
    <pattern> WHO IS Isaac Newton </pattern>
    <template>Isaac Newton was a
      physicist</template>
  </category>

  <category>
    <pattern> WHO IS Niels Bohr </pattern>
    <template>Niels Bohr was a physicist</template>
  </category>

  <category>
    <pattern>ARE YOU SURE U KNOW WHO *
    IS</pattern>
    <template>
      <srai>WHO IS <star/></srai>
    </template>
  </category>

</aiml>
```

3. Example for `<random>` and ``:

```
<aiml >
  <category>

    <pattern>Hello</pattern>
    <template>
      <random>
        <li> HI </li>
        <li> Hi! How do you do </li>
      </random>
    </template>
  </category>
</aiml>
```

4. Example for <set> and <get>:

```
<aiml>
  <category>
    <pattern>I am not */</pattern>
    <template>
      Hello <set n = "uname"> <star/>!
    </set> </template>
  </category>

  <category>
    <pattern>Good Evening</pattern>
    <template>
      Hi <get n = "uname"/> Thanks for having
      a conversation with me
    </template>
  </category>
</aiml>
```

5. Example for <that>:

```
<aiml >

<category>
  <pattern>WHAT ABOUT Games</pattern>
  <template>Do you like RPG games</template>
</category>

<category>
  <pattern>YES</pattern>
  <that>Do you like Racing games</that>
  <template>Nice, I like racing games too. </template>
</category>

<category>
  <pattern>NO</pattern>
  <that>Do you like RPG games</that>
  <template>Ok! But I like RPG games</template>
</category>
</aiml>
```

6. Example for <topic>:

```
<topic name = "topic-name">
  <category>
    ...
  </category>
</topic>
```

7. Example for <think>:

```
<aiml >

<category>
  <pattern>My name is not */</pattern>
  <template>
    HI! <think><set n = "uname"> <star/></set></think>
  </template>
</category>
<category>
```

```
<pattern>Nice to meet you
again</pattern> <template>
  Hi <get n = "uname"/> Thank
  you </template>
</category>
</aiml>
```

8. Example for <condition>:

```
<aiml>

<category>
  <pattern> WHAT'S UP
  </pattern> <template>
    <think><set n = "state1"> SAD</set></think>
    <condition name = "state1" value = "sad">
      I am sad!
    </condition>
    <condition name = "state1" value = "happy">
      I am happy!
    </condition>
  </template>
</category>
</aiml>
```

4. PROPOSED SYSEM

There are 3 main users in this Chatbot application.

- Admin.
- Guest User.
- Registered User.

Functionalities of each user

Guest user: Guest user doesn't have any functionality. He/she can only access the chatbot for information.

Admin: Admin has many functions.

- Add Question.
- Add Answers.
- Add Categories.
- Generate reports.
- Manage the dataset.

Registered user: Once the user is registered, he/she can use the following features.

- Voice or text input.
- Search for information.
- Frequently searched questions.
- Frequently searched categories.
- User profile.
- Comments and suggestions.
- Payment option for improving the site and chatbot.
- Contact Admin for any kind of help.

In this paper has proposed an efficient chatbot for Organizational related Frequently Asked Questions, and the working of proposed system is displayed in the figure below.

Here the working is split into three different parts. First the client asks a question to the chatbot. Next the chatbot will check whether the query asked by the user is in the required aiml format. If not, the question entered by the user is processed to the required aiml format. Then the pattern matching is done with the patterns already existing to get the required output.

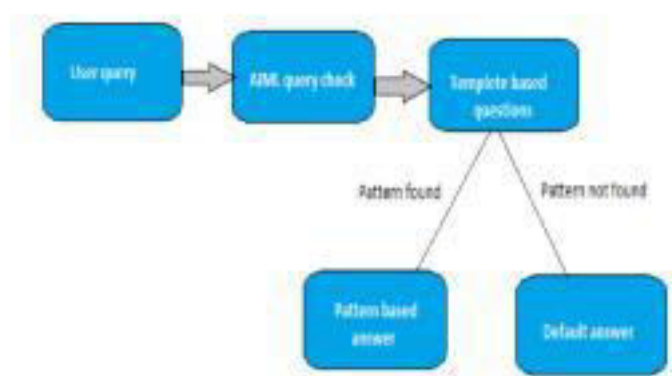


Fig -1: WORK FLOW

CONCLUSION

Artificial Intelligence is gaining more and more popularity in recent years human to human interaction is getting less and less. Nowadays many of the companies have replaced people with machines or chatbots in helpline centers or customer support. But still there is not a single chatbot that can fool a person by posing as a human. But the chatbots can be made more effective by improving human-computer interaction. The paper proposes an effective and accurate chatbot with the help of AIML. As for the future scope the existing system can further be improved by using natural languages processing techniques like LSA and combine it with AIML to make it more efficient.

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