

CHATBOTS FOR APPOINTMENT

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Abstract - Bots or Internet robots, they are known as spiders, crawlers, and web bots. They may be used to perform repeating jobs, which includes indexing the search engine, mostly they come in the form of malware. Malware bots are used to gain total control over a computer. Bots perform faster than human users. Chatbots are used widely in different service industries which will help to schedule the meetings, for online shopping, making reservation in a restaurant, customer care services and many more. The function of chatbots design is to provide satisfying responses to the given user's requests. In this project we will create a website for Appointment booking, where it will show three options (Doctor Appointment, Saloon Appointment, Admission Enquiry Appointment, Hostel Enquiry Appointment).

Key Words: Internet Bots, Malware bots, Computer

I INTRODUCTION

Bot can be defined as it is a software program / application which is programmed to do related activity. They are automated [1] which means they can run according to their own instructions without needing a human to start them. Bots always do repeating tasks and can perform much faster than human user.

The operation of bots is performed over a network. Most of the traffic in internet is bots their work is to scan the content, interact with the webpage chat with the users and or looking for attacking the targets.

There are also bots which are "bad bots" and they are programmed in such a way they can break into user accounts, scan the web for getting information and sending spam, or it can be used to perform malicious activity. It also have an IP Address if it is connected to the internet.

Different types of bots are there they are:-

Chatbots: These types of bots can simulate human conversation by responding to the certain phrases having programmed responses.

Web crawlers: These bots can scan the content present on the webpages present all over the internet.

Social bots: These are the bots which are operated on platforms like social media.

Malicious bots: These bots spread spam and carry stuffing attacks.

II MALICIOUS BOT ACTIVITY

Malicious bot [2] activity is nothing but it violates website's owner's intentions, site's Terms of Service and the site's Robot.txt rules for which the behavior of the bot can be considered malicious. Bots can also be used in different way to carry out different types of cybercrimes like identity theft, account takeover these bots are also considered as "bad bots".

The excessive bot traffic can also affect the web server's resource(s), can also slow down or stop the service for the legitimate human user's trying to use a website application. This is also intentional sometimes and also the attack can be of Dos or DDoS attack.

Different types of malicious bot activity are:-

- Credential stuffing
- Web/content scraping
- DoS or DDoS attacks
- Brute force password cracking
- Inventory hoarding
- Spam content
- Email address harvesting
- Click fraud

III BOT MANAGEMENT

Bot management can be defined as blocking of or malicious Internet bot traffic while giving permission to bots which are useful to access web properties. It can be achieved by detecting the activity of bot, difference between good and bad behavior of the bot, and verifying the sources of the activity which is not desirable.

Bot management is necessary because bots, if left and not checked properly, it can cause massive problems to web properties. Very much bot traffic can put a heavy load on web servers, slowing or denying service to legitimate users (sometimes this takes the form of a DDoS attack). Malicious bots will scrape or download content from a website, steal user information, fastly spread spam, and perform various other kinds of cyberattacks.

IV WORKING OF BOT MANAGEMENT

For identifying the bots[4], the bot manager may use javascript challenges or captcha challenges. Also it determines the human and the behaviour of the bot means that comparing the behaviour of the user to the behaviour of the user in the past.

If the behavior of the bot is bad then it is blocked and redirected to another page. Also, if the behavior of the bot is good then it is added to the whitelist.

Another way to the robots.txt file can be used and honeypot can be setup. Honeypot is used as a false target for bad bots, when they are accessed, it exposes the bad bots and are considered as malicious.

V ROBOTS.TXT FILE

Robots.txt is a file which is present on web server which defines the rules for the bots for accessing properties present on the server. However, is the file does not enforce these rules. It is essential that, anyone who programed a bot are supposed to follow a system and a surety should be given that the bot checks a website's robots.txt file before accessing the website. Malicious bots, do not follow this system – so the need for bot management arises.

VI WORKING

The customer will choose any of the option according to his/her requirement. Then a new chatbot window will open. If the person has selected doctor appointment, then first it will ask about the person's location, then it will ask about the type of disease[3], which doctor the person wants to visit and in which hospital, then it will ask about the day and time the person wants to book an appointment. The person can also select and book restaurant.[4]

If the person selects saloon Appointment first it will ask about gender selection, then according to it, it will display various choices as what service the customer wants. Under those services there will be subcategories and the price will also be mentioned. The person will select according to his/her choice. Then the person will select date according to his/her needs. In Admission Enquiry Appointment, the list of colleges will be displayed then in which college the person wants to get admission he/she can choose[5]. Then it will display the branch along with the fee structure. If he

is not satisfied with the details then he can take appointment to visit the admission cell for further enquiry. Similarly, in hostel enquiry[6] he can select the college he have taken admission, then he will select the type of room he wants

, hostel fee details, mess details all will be available. We will make use of google calendar. If there is no availability, it will automatically[7] display a message as "Please choose any other date and time".

How the chatbot[8] works is shown below:-

Pattern Matching:

Bots use pattern matching[9] to for arranging the text and giving a proper response for the customers. A standard structure of these patterns is "Artificial Intelligence MarkupLanguage" (AIML).

A simple pattern matching example is given:-

```
<aiml version = "1.0.1" encoding = "UTF-8"?>
<category>
  <pattern> WHO IS ABRAHAM LINCOLN </pattern>
  <template> Abraham Lincoln was the US President during American civil war. </template>
</category>

<category>
  <pattern> DO YOU KNOW WHO * IS </pattern>
  <template>
    <srail> WHO IS <star/> </srail>
  </template>
</category>
</aiml>
```

Fig:-1 Pattern matching example

The machine will give the following output:-

Human: Do you know who Abraham Lincoln is?

Robot: Abraham Lincoln was the US President during American civil war.

Fig:2 Output of the above pattern matching example

NLP (Natural Language Processing)

NLP Chatbot[10] will takes some of the combination of steps for converting the customer's text or speech into structured data that can be used for selecting the related answer. Some of the Natural Language Processing steps are described below:

Sentiment Analysis: It is used to learn if the user is having a good experience or if after some point the chat should be forwarded to the user.

Tokenization: In this the NLP will divide the given string of words into parts or tokens that are linguistically symbolic and are useful for the application[11].

Named Entity Recognition: Here, the chatbot [12] program model will look for different categories of words, like the product name, the user's name or address, whatever data is required.

Normalization: The Chatbot program [13] model will process the text and to find spelling mistakes or typing errors that the user wants to show. This will give the user like effect of the Chatbot to the people.

Dependency Parsing: The Chatbot looks for the objects and subjects- verbs, nouns and common phrases in the user's text [14] to find dependent and related phrases that users might be trying to convey.

ALGORITHM

For each question, a unique pattern [15] should be made available in the database to provide a suitable response. With lots of combination on patterns, it will create a hierarchical structure. We will use algorithms to reduce the classifiers and generate the more manageable structure. Computer scientists call it a "Reductionist" approach- in order to give a simplified solution, it reduces the problem.

Multinomial Naive Bayes is the algorithm for text classification and NLP. Now, here we will assume a set of sentences are given which are belonging to a particular class. With new input for each sentence, each word is counted for its occurrence like how many times it has occurred and is accounted for its commonality and each class is assigned with a score. The highest scored class is the most likely to be associated with the input sentence.

VII PROPOSED SYSTEM

In our work "Chatbot for appointments" the chatbot is used for carrying out several works. Like, here we are using chatbot to interact with users. Here, in our work in a website it will have several sections like for appointment it will further have appointment for doctor, appointment in a salon, and many more. It will also have college enquiry, school enquiry where the user can get information of the institute like contact no., website, what is process for admission, how far is the college/school. All these features are included in this system. The chatbot is used in a positive way to clear all the doubts of the users and to get the accurate information. This bot will not store the user's personal information, browsing history, IP address of the users.

VII EXISTING SYSTEM

Chatbots, also known as conversational agents, interactive agents, virtual agents, virtual humans, or virtual assistants, are artificial intelligence programs designed to simulate human conversation via text or speech. Many positive viewpoints have been made on the

potential uses of health care chatbots within the marketing and business world

[1-10]; however, some research has examined their effectiveness in real-world patient cases, that is, to improve health outcomes [11,12].

In the previous projects there is only a particular appointment booking chatbot, but in our project we are creating a website and here there will be various appointment chatbots. There is no authentication facility.

Chatbots are commonly used in marketing applications such as to guide consumers through electronic commerce websites, answer questions related to products and services, help troubleshoot problems with internet service, act as a personal concierge, or provide consumer advice. In the context of health care, chatbots or *healthbots* are intended to provide personalized health and therapy information to patients, provide relevant products and services to patients, as well as suggest diagnoses and recommend treatments based on patient symptoms. Chatbots in health care may have the potential to provide [13-15] patients with access to immediate medical information, recommend diagnoses at the first sign of illness, or connect patients with suitable health care providers (HCPs) across their community [17-19].

VIII CONCLUSION

We found that in one single website we can make four options of appointment booking. He/she can choose anyone of his/her choice. i.e. Doctor Appointment, Saloon Appointment, Admission Enquiry Appointment, Hostel Enquiry Appointment. It will be easy for them as they can directly choose and appointment booking site out of four options. It will save their time too. It will also reduce the complexity. Physicians also believed in the cost and the benefits which are associated with chatbots, depending on the specific roles in the technology. They also have a crucial role to play in health care to support, motivate, and coach the patients as well as for efficient organizational tasks; in essence, chatbots could become a surrogate for nonmedical caregivers.

IX FUTURE SCOPE

The future scope of this project can be, that we can add other appointment booking portals like railway reservation, flight reservation, restaurant booking etc. in this website. The work in this thesis was limited to a rather small domain. Tests on other, perhaps broader, domains would be needed to see how the results scale. It would also be of interest to try additional learning models and assess their performance in comparison to the models discussed in this thesis. There exist many different neural network based conversational models that each have their own strengths and weaknesses.

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BIOGRAPHY



Kirti Shekhar Pandey received his Bachelor of Technology in Computer Science Engineering from SRM Institute of Science and Technology, Chennai. He also received his Master in Technology in Computer Science Engineering. His research interest includes Android Application Development, Deep Learning, Image Processing, Artificial Intelligence and Machine Learning.