SURVEY ON SIMPBot

[1] **Rio Glen Lobo** [2] **Sambhav Jain**, [3] **Saraj Kishore**, [4] **Saurabh SR,** [5] **Dr. M Vinoth Kumar**
[1][2][3][4]BE Students, Department of Information Science and Engineering
[5] Associate Professor, Department of Information Science and Engineering
[1][2][3][4][5] Dayananda Sagar Academy of Technology and Management, Bangalore, Karnataka, India

ABSTRACT

Texting, chatting, and SMS (short messaging service) have become an extremely popular medium of short and informal communication because they are very easy to send and receive. The urge to freely communicate with others is normal ,humans are very social creatures who have a deep seated instinct to form social groups ,so that they may find security in the pack , hence this desire to have a healthy relationship is something we are born with.
However, this social and biological pressure to develop a friendship or an intimate relationship may lead to an individual in making a serious lapse of sound judgement when it comes to choosing the receiver of his emotions. If we keep relying on our various forms of technologies and social media platforms to meet and socialize with new people across the globe, we may very end up in threatening and treacherous situations because there is really no feasible way to be sure of whom exactly we are talking to .Which is why a well defined chat bot with the ability to gauge human sentiment as well the intentions behind their messages and the ability to respond appropriately as well raise any necessary red flags about the communicating party would greatly ease the pressure of texting while safeguarding the user from malicious messages.

Keywords*: SIMPBot, DialogFlow, React, SVM, OpenCV.*

I. INTRODUCTION

Textual chat or SMS refers to any means of communication or social interaction over the internet which offers the instantaneous transmission of messages or media from the sender to the receiver.
Chat rooms and online messaging platforms are currently the most popular ways for individuals to connect online to other individuals from across the globe. There may exist numerous reasons why a person would want to interact with a stranger on the internet in this modern world.
While numerous individuals enjoy the ease and simplicity of communicating via text, a few tend to enjoy its mystery as well as its anonymity. It is very easy to get overwhelmed and addicted in this new world of electronic communication if one tends to suffer from issues with self-esteem, self-worth depression, vanity or anxiety.
In the above instances, a certain amount of anonymity in the communicating medium allows for an individual to interact and socialize with somebody else without having to feel the pressures of social anxiety, peer pressure or social awkwardness that is often associated with in-person or face-to-face communication.

It does not matter how genuine or sincere the individual on the sender side of the chat may seem, there is absolutely no way to know if they are being honest. Sharing personal information with a stranger can make you vulnerable to various kinds of attack, such as emotional abuse, cyber bullying or other serious attacks such as phishing and other cyber attacks.

Victims never anticipate that they may be victimized, certain characteristics may increase the dangerous of someone taking advantage of you or even your friends and family through you. As genuine and kind as your intentions may seem, one should always exercise caution while using text chat to communicate with random individuals. In fact, a very recent statistic has show that nearly 75% percent of teens, preteens and even adults are open to share intimate details about themselves or their families in return for few benefits ,which can vary from social validation, extortion and financial handouts . Furthermore, in 100% of the cases of online sexual predators luring teens,the teens have gone voluntarily to meet their assaulter.
We have come up with a rather innovative solution to this issue,we propose a chatBot SIMPbot which would act as an intermediary who would respond on behalf of the receiver.

SIMPbot is a unique chatbot that will be developed,the main objective is to create a Bot Which observes and analyze the conversation of individuals
recognizes patterns and try to capture any hateful, derogatory sentiments in the conversation,
rates the individual on the basis of its speaking/writing ability and check if he/she passes a certain etiquette threshold.These features should help the user get a gauge of senders intentions and make a decision of whether to carry on the conversation or not.
Additionally ratings can be utilized to make amendments in the individuals or whether to give him/her access to a specific platform.This paper provides a brief overview of the approach to the above motive

II.IMAGE RECOGNITION

We have entered a generation where computers can see and think like their human counterparts. A human brain has been trained in such a way that we can subconsciously distinguish between different entities in real-time without any struggle.

Contrary to the human brain, a computer views the same entities as an array of numerical values and searches for a particular pattern in this matrix of numbers.

Image recognition is a broad topic of computer vision where computers are taught to "see" things like how humans do. Machine learning concepts and algorithms are fed to the system for a computer to understand a visual target object.

The most common application of Image Recognition is the unlocking of your phone through Face ID/Iris Scanner. Our mobile device first scans the shape of the face with the help of infrared light that is invisible to the human eye and therefore acquires a unique pattern and stores it in the database for future reference.

Now, when a face tries to unlock the device, this infrared light will acquire a particular pattern again and compares it to the image that was made when it was initially set up. When the pattern matches, the user gains access to that device.

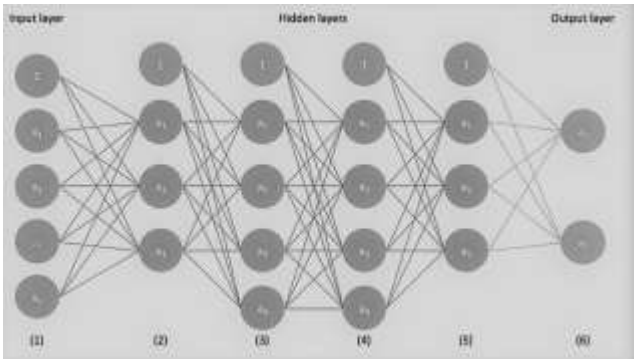
III.CONVOLUTION NEURAL NETWORK

Convolution Neural Network is a specific network that helps to analyze visual imagery and differentiate one object to another. Deep learning algorithms use this unique type of neural network to make sense of the image.

A CNN consists of an input, an output, a pooling as well as several hidden layers. The hidden layers are called the convolution layers, which makes up the CNN.

A convolution layer receives an input, transforms it in some way and outputs the processed information into the next convolution layer. This transformation that uses the convolutional layers is called convolution operation

CNN helps to detect patterns and images; more precisely, the convolution layers are what helps CNN to recognize those patterns. At each convolution layer, we must be able to define the number of filters it should have. Therefore, these filters are what identify the patterns.



IV. HOW DOES CNN WORK?

CNN works by breaking down an image into smaller groups of pixels called filters. Each of these filters is a matrix of pixels, where we can decide the number of rows and the number of columns the matrix has.

Each of the values within the matrix is initialized with random numbers. Each of these filters is placed over an array of image pixels. Therefore then creates what's called a "convolved feature map."

The pooling layer then down-samples or reduces the sample size of a particular feature map; This makes processing much faster as it reduces the number of parameters the network needs to process. The output of this is called a "pooled feature map."

There are two ways of doing this:
• Max pooling: which takes the maximum data of a particular convolved function, or
•Average pooling: which takes the average data of a convolved function.

The above steps help to extract features which therefore helps the network to build up a picture of the image data with the help of its own set of mathematical rules.

A neural network that contains a more complex set of connections can process only linear data. A CNN is a feedforward network that filters spatial data, whereas an RNN (Recurrent Neural Network), as the name suggests, feeds data back into itself. RNN is better suited for

V. CHATBOT

Chatbot is a software designed to emulate the atmosphere of talking to a real individual online. It can be in a format of text or maybe in the format of text-to-speech. Its main motive is talk as a real individual would do in a real-life conversation. This requires a lot of tuning and testing. The term was first coined in 1994 by Michael Mauldin to describe these types of conversational programs.
Chatbots are used in various dialog systems for various services like customer support, routing and information gathering. Some chatbots uses word classification processes, natural language processing and artificial intelligence. Some chatbots simply scan for the general phrases and words from the databases or libraries.

VI. ARCHITECTURE OF CHATBOT

The architecture of chatbot includes an Intent Classification module which identifies the intent of users' messages. Entity recognition module which extracts some structured bits of information from the message. The candidate response generator does all the specific calculations to process the user request. And finally, the response selector just scores all the response candidates and selects the most suitable response for the user.

VII. CHATBOT WORKING

1) The messages will be provided by the user in the frontend (i.e., React).

2) The messages will be transferred from the frontend to the Dialog Flow.

3) The message is categorized and matched to a corresponding intent (Intents are defined manually by developers in Dialog Flow)

4) We define the following actions for each intent in the fulfillment (Webhook).

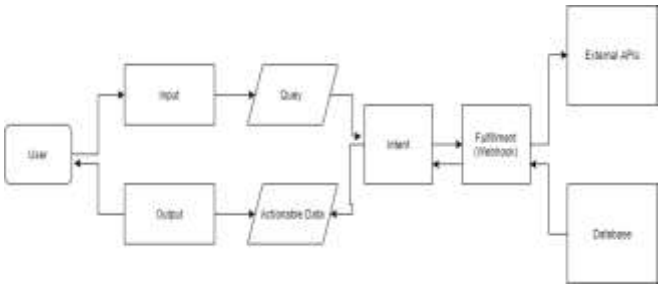
5) When a particular intent is found by the Dialog Flow, webhook will use external APIs to find an appropriate response in the databases

6) The required response is sent back from the database to the webhook.

7) Webhook sends a formatted response to the intent.

8) Intent creates an actionable data which is then sent to the frontend.

9)The user gets the appropriate response from the simbot.



VIII. SPEECH DETECTION

Detection of abusive language is a difficult task to perform and working on a dataset to detect acceptable and unacceptable content is a much difficult task to perform.

VIII.I WORD EMBEDDED MODELS

We have used the Word Embedded Model, in this all words of similar meaning have an analogous encoding. Embedding means 'dense' vector. Sentences are split into words and characters. Each word is represented as an array of numbers and Each character is represented as a binary array of numbers. One of the models that is developed by the word embedding approach is Word2Vec, it makes use of three layers which are the input layer ,hidden layer and an output layer.Word2vec utilizes the two model architecture to produce a distributed presentation of words: Continuous Bag-of-words (CBOW) or continuous skip-gram. In the above architecture, the model predicts the current word out of a window of surrounding context words. The given order of context words tends to not influence prognostication (bag-of-words assumption). In the continuous skip-gram architecture, the model uses the current word to prognosticate the neighbouring window of context words. The skip-gram architecture weighs closeby context words more heavily than the distant context words. CBOW is faster while skip-gram is relatively slower but is prone to do a marvelous job for infrequent words.

VIII.II ONE-HOT

A one-hot is a group of bits among which the legal combinations of values are only those with a single high (1) bit and all the others low (0). In natural language processing, a one-hot vector is a 1 × N matrix (vector) used to distinguish between each of the given words word in their vocabulary from alternate words in the vocabulary. The vector mainly made up of 0 in all the cells with the exception of a single 1 in a cell used uniquely to recognize the word. One-hot encoding guarantees that machine learning does not assume that larger numbers are more valuable. For example, the value '8' is bigger than the value '1', but that does not mean that the value of '8' is more important than that of '1'. The same is true for words like: the value 'New York' is not more valuable than that of 'York'.

IX. CONCLUSION

The aim of SIMPBot is to create a bot which is able to observe the conversation and analyse whether the individual chatting is appropriate or not.

The bot tries to grasp any hateful,derogatory sentiment made by the individual and rate him/her on the aforementioned information. The rating achieved in the process can be utilised to make amendments in the individuals itself or whether to allow that individual on a said specific app or platform. We strongly believe that future implementations of this bot will lead to a safer online environment in which conversations are monitored not for tracking,advertisements and other such money making schemes but for the safety of our users.

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