Chat System Based on Filtered Contents

Dr Manish Gupta   Mukti   Ashish Trivedi   Neha Srivastava   Nishtha Varshney

(Assistant Professor)   *(BTech. Final Year)*
(CS & E Department)   *(CS & E Department)*
(MIT, Moradabad)   *(MIT, Moradabad)*

Abstract—— **An application to monitor the use of abusive and vulgar language on chats on social media networks to prevent users from being obscene can play a part in modifying the way users interact with each other. "Friendly chat" is a play on a group chatting application, users can discuss a range of topics that is completely unrestricted. When things start heating up a user may become abusive towards other users, at times like this the application will quickly diffuse the situation by deploying preventive measures, stopping the abusive user in his tracks. Using classification and machine learning techniques such as simple Naive Bayes. There has been an emerging trend of a vast number of chat applications which are present in the recent years to help people to connect with each other across different mediums, like Hike, WhatsApp, Telegram, etc. The proposed chat application used for chatting purpose with users connected to the internet, and it will not let the user send inappropriate messages.**

Index Terms—**Dictionary, Named Entity Recognition, Natural Language Processing, Networking, Parts of Speech tagging, Sentimental Analysis, Stemming, Tokenization.**

I. INTRODUCTION

The world we live in today is a world of social media that revolves around interacting with peers and colleagues all around the world. The growing use of social media has made it easy for people from all ages to interact on the same forum and express their opinions. Social media provides all kinds of interactive medium such as online chat rooms, discussion boards and bulletins and online discussion forums where people can freely and openly discuss with their peers. However, the discussion of things that you care about can be difficult. The constant threat of abuse along with harassment online means that people stop expressing themselves and are not able to seek out opinions that contradict popular belief. Current platforms struggle to censor this sort of abuse online, leading to the rapid decline of their online community, as users are not able to freely express themselves without fear of being abused or being met with identity hate for his/her opinions.

To prevent this an online chatting application that is capable of informing a moderator when a user is being abusive is created and described in this paper. The chatting application will be a group chat application with no topic restrictions. Users can enter the chat room using a login and can interact using images or text.

Online chatting refers to the process of sending and receiving messages using the internet. There are various chatting applications available in the market. The total number of users using chat applications are more than 5.03 Billion, and widely used apps are WhatsApp, Facebook Messenger, We Chat, QQ Mobile, etc., All these applications provide various features to ensure security, integrity, and consistency. All these apps let the user send any messages, and the messages can be lewd or inappropriate. There are many cases filed for sending lewd or inappropriate messages in various online mediums. It may also be possible for the user to send inappropriate messages by mistake. A given piece of information produced by any user or agent is said to be inappropriate if the expressed intent may cause anger, annoyance to certain users or exhibits lack of respect, rudeness, discourteousness towards certain individuals/communities or may be capable of inflicting harm to oneself or others. According to Section 66A of the Information Technology (Amendment) Act, 2008 says that transmitting of obscene information using a transmission equipment which may result in three years of incarceration including a fine. In order to solve these concerns, the proposed mechanism implemented. The proposed chat application used for chatting purpose with users connected to the internet, and it will not let the user send inappropriate messages.

II. RELATED WORK

Many researchers have done their work on extraction of image text and retrieving the information though there are many challenges. These researches are based on different image text detection and extracting techniques which have their own advantages as well as limitations. Review of these literatures is given by the following table in summarized way.

Chowdhury Md. Mizan, Tridib Chakraborty and Suparna Karmakar , proposed algorithm to recognize printed hard copy and convert to required format text using OCR (Optical Character Recognizing) and Image Processing techniques. The algorithm recognizes the character offline, is efficient to extract bimodal images and is applicable in retrieval of image, video, web page text etc. They suggested that future researchers have to done on OCR area.

Akhilesh A. Panchal, Shrugal Varde, M.S. Panse, used combination of two approaches, Connected component and Region Based to provide access of computer vision technology for

visually impaired people by extracting and converting image text into speech in approved accuracy and speed. Combination of approach techniques results faster and better system. The system is not checked with complex image and text of small size and varied alignment. The authors suggest combination of techniques for improvement of accuracy and speed.

Najwa-Maria Chidiac, Pascal Damien, Charles Yaacoub, used MSER (Maximally Stable Extremal Regions) and Stroke Width Detectors to detect and extract text from natural scene regardless of orientation with improved accuracy on blurred and noisy image. But the proposed system couldn't detect image having text with small size or thin width and shadow effect.

Jack Greenhalgh and Majid Mirmehdi created novel system for detection and recognition of text in traffic signs automatically using MSER (Maximally Stable Extremal Regions) and HSV (Hue-Saturation-Value). The result improved accuracy of recognition F-measure of 87%. The image on sign must be capture when it is larger size.

Rashedul Islam, Md. Rafiqul Islam,Kamrul Hasan Talukder, proposed hybrid techniques (Edge-Based and Connected Component Based) that enables to increase accuracy of text area detection and extraction techniques by combining. In this algorithm accuracy of the extraction system is improved (87.25%). They test using only 08 images to evaluate, but not considered degraded images and small size text, not checked by OCR to recognize characters. Future work is to create database for sake of training.

Arvind, Mohamed Rafi used connected component method to maximize detection and extraction of text from image and categorizing it. They tried to improve performance in precision (65.06%) and recall rate (89.25%), and presented the results in graph.

Vaishnav Ganesh, Dr. L. G. Malik analyzed Big Data by Google Apis and proposed the framework for Big Data Image used Color based partition method and Text line grouping method using Canny edge detector and Hough transform methods respectively. By applying trained classifiers either time or efficiency will be improved.

Harpreet Singh, Deepinder Singh used mathematical morphology for Extraction of image text using resulting improved performance and low noise. But not detecting small text from complex background. The paper states the future work to be Extracting small text, and converting into editable form.

Partha Sarathi Giri compared two basic approaches for extracting text region in images: edge-based and connected-component based using a set of images that vary along the dimensions of lighting, scale and orientation. Proposed future work to design the verifying extraction text region by SVM and HMM, and then to design recognizer system for extraction text regions.

Niti Syal, Naresh Kumar Garg the paper is based on integration of Daubechies DWT, Gradient Difference and SVM, resulting extract text region effectively. Future work proposed is implementation of OCR system to recognize the text, use better method in non-text removal.

III EXISTING TECHNOLOGIES

A. Chat Application with Username and Password Authentication Security

This paper states that since there is a lot of changes which had occurred in the recent past and the customers are changing their needs from time to time, it has become a necessity to build a chat application that matches the present crowd. It will enable one client to communicate with other client with real time transmission of text messages from sender to receiver. Users interact using pictures or text.

B. Machine Learning Algorithm

(i) Naïve Bayes model

The model utilizes a bag of words approach that will tokenize each training document into a set of unigrams and bigrams. This is followed by a sparse matrix construction. The sparse matrix will be constructed using the TFIFD vectorizer function which is included in the sklearn library in python. The function will remove the commonly occurring words that occur too often in the training set as well as the words that occur very rarely. For the remaining words the TF-IFD value is stored in the sparse matrix. This matrix forms a uniform input to the classification model. The naïve bayes support vector machine model utilizes naïve bayes along with linear regression to classify individual data points into one or more of the six categories as mentioned before. The input taken by this classification model is the sparse matrix obtained directly from the bag of words approach. The model will perform classification using naïve Bayes along with linear regression to perform a classification for every document in the test set. This classification is done one by one for each and every category.

IV. PROPOSED METHOD

Failure to identify the inappropriate context in the text message is the main reason for various problems. The proposed system illustrated in Fig.1
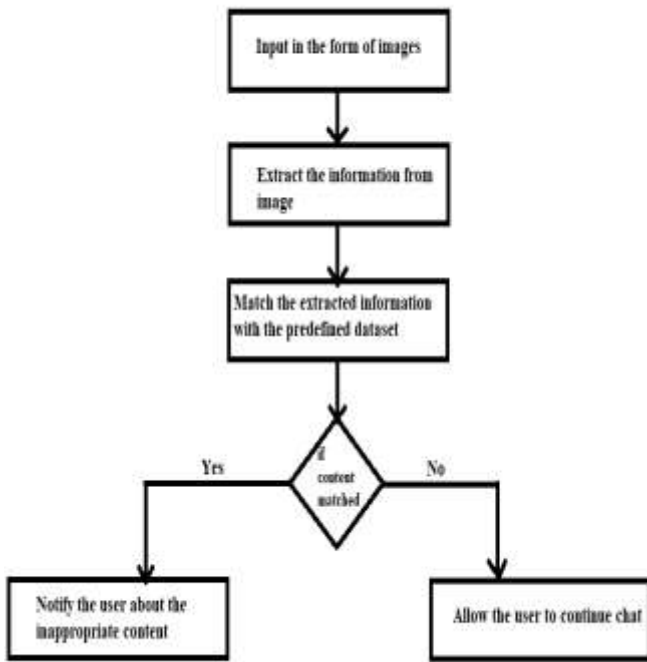
Fig.1 .Block Diagram of the Proposed System

The first phase deals with data pre-processing. The result of the first step given as an input to the second phase. The first step deals with the input data, if the data is in the form of image then first we will extract the text from the image. These words compared with user dictionary to identify irrelevant terms. If the text compared with dictionary is matched then we will show a pop up to the user that the text is not appropriate for this particular chat. The third phase deals with sending and receiving the messages depends on the user if he wants to use that word for that particular chat to continue the conversation.

A. Dataset

Any natural language text phrase is defined as inappropriate if it intents is any of the following

a) Rude, discourteous or exhibiting lack of respect towards certain individual or group of individuals.
b) Capable of inflicting harm to oneself or others.
c) Related to an activity which is illegal as per the laws of the country.

d) Has extremely violence.

B. Text Classification

This system forms the back end of the application that facilitates the classification of user messages into one of several categories. The model will be trained by using a training data Once. The model is appropriately trained it is fed the data obtained from the real time database from firebase. The model will approximately classify a message into one or many categories and will return the results of this classification. Automatic text classification has always been an important application and research topic since the inception of digital documents. Today, text classification is a necessity due to the very large amount of text documents that we

have to deal with daily. In general, text classification includes topic based text classification and text genre-based classification. Topic-based text categorization classifies documents according to their topics. Texts can also be written in many genres, for instance: scientific articles, news reports, movie reviews, and advertisements. Genre is defined on the way a text was created, the way it was edited, the register of language it uses, and the kind of audience to whom it is addressed. Previous work on genre classification recognized that this task differs from topic-based categorization.

The related work states that there are no methods or provisions for identification of lewd or vulgar context in the typed message of a user and stop the user from sending the message. The proposed methodology solves these issues.

V. IMPLEMENTATION

The process begins with data accumulation on the real time database as users constantly send messages to one another on the application User interactions are recorded and entered systematically on the database.
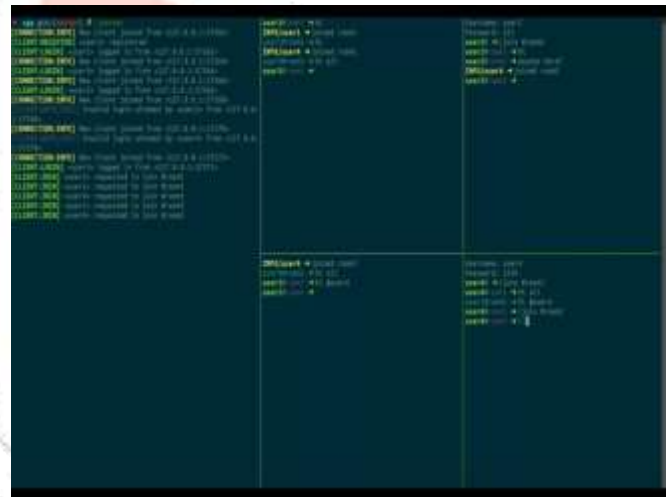

Fig. 2. Screen of Chat Application

Data pre-processing is a procedure of data mining, executed on real-time data, which is vociferous, inadequate or erratic. The subsequent data scrubbing measures are employed:

(i) Eliminating all the distinctive letters from the line.

(ii) Trimming undesired tabs, spaces, newlines and additional nonprintable letters in the line.

(iii) Transforming the entire text to lower case. All these steps performed to make computation easy.

Naïve bayes concepts applied to the preprocessed data. It is a method for machines to evaluate, determine, and obtain the semantics of human language wisely. Word Tokenization, Sentence Tokenization, Removal of Stop words, Stemming, Entity Recognition, Parts of Speech Tagging, etc. are practiced to

reconstruct the data to a pattern suitable for interpretation. Parts of Speech Tagging examines the text and assigns parts of speech to each token as a verb, adjective, noun, etc., Entity Identification helps to classify the named entities like persons, organizations, etc., from the text. After implementing techniques on the pre-processed cleaned data, definitive keywords derived. These keywords compared with the keywords available in the user dictionary. The vocabulary contains all the keywords. From the keywords procured from the text, the sentiment of the context determined. If the meaning of the message is inappropriate, then user not allowed to send the message.
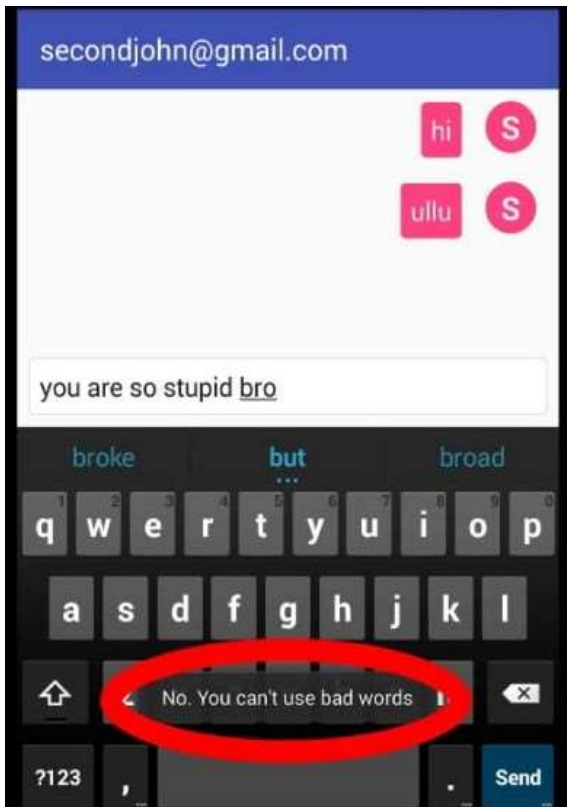

Fig. 3. Displaying warning message if the user tries to send inappropriate message

VI. CONCLUSION

It is the need of the hour to create a professional application that will not let the user send inappropriate messages. This study was intended to create an application that would perform a toxicity classification. Based on this study, we were able to propose a better model for the application.

There are a number of possible areas for future scope. The image classification of this would result in a much more accurate result.

REFERENCES

[1]. S. Grover, K. Arora, S. K. Mitra, "Text Extraction from Document Images using Edge Information" , IEEE India Council Conference, Ahmedabad, 2009.

[2]. Arvind, M. Rafi, "Text Extraction from Images Using Connected Component Method" JoAIRA, STM Journal, 2014, 13-18.

[3]. D. Gera, N. Jain, "Comparison of Text Extraction Techniques-A Review", International Journal of Innovative Research in Computer and Communication Engineering, 2015, pp. 621-626.

[4]. Y. Gupta, Sh. Sharma, T. Bedwal, "Text Extraction Techniques", International Journal of Computer Application, NSFTICE, 2015, pp. 10-12

[5]. A. Panchal, Sh. Varde, Dr.Prof.M.S.Panse, "Comparative study of Image processing techniques used for Scene text detection and extraction", International Journal of Engineering Research and General Science (IJERGS), 2016, pp. 183-188.

[6]. Shivani, D. Bansal, "Techniques of Text Detection and Recognition: A Survey", International Journal of Emerging Research in Management &Technology (IJERMT), 2017, pp. 83-87.

[7]. N. Syal, N. K. Garg, "Text Extraction in Images Using DWT, Gradient Method And SVM Classifier", 2014, pp.477-481

[8]. V. Ganesh, Dr. L. G. Malik, "Extraction of Text from Images of Big Data" International Journal of Advance Research in Computer Science and Management Studies, IJARCSMS, 2014, pp.40-46.

[9]. Ch. Md Mizan, T. Chakraborty* and S. Karmakar, "Text Recognition using Image Processing", International Journal of Advanced Research in Computer Science (IJARCS), 2017, pp. 765-768.

[10]. A. Panchal, Sh. Varde, M.S. Panse, "Character Detection and Recognition System for Visually Impaired People", IEEE, International Conference On Recent Trends In Electronics Information Communication Technology, 2016, pp.1492-1496.

[11]. Najwa-Maria Chidiac, P. Damien, Ch.Yaacoub, "A Robust Algorithm for Text Extraction from Images", IEEE, 2o16, pp.493-497.

[12]. R. Islam, Md. Rafiqul Islam ,Kamrul Hasan Talukder "An Approach To Extract Text Regions from Scene Image", IEEE, International Conference on Computing, Analytics and Security Trends (CAST), 2016, pp.138-143.

[13]. P. S. Giri, "Text Information Extraction and Analysis from Images Using Digital Image Processing Techniques," International Journal on Advanced Computer Theory and Engineering (IJACTE), 2013, pp.66-71.

[14]. H. Singh, D. Singh, "Text Confining and Extraction in Image Using Mathematical Morphology," International Journal of Science and Research (IJSR), 2012, pp.288-290.

[15]. J. Greenhalgh and M. Mirmehdi, "Recognizing Text-Based Traffic Signs," IEEE Transactions On Intelligent Transportation Systems, 2015, pp.13601369.

[16]. R. Hedjam, R. F. Moghaddam and M. Cheriet, "TEXT EXTRACTION FROM DEGRADED DOCUMENT IMAGES", April 2014, https://www.researchgate.net/publication/2242141 56_Text_extraction_from_degraded_document_im ages , August 20, 2017.

[17]. MathWorks, Inc.,"Image Processing Toolbox User'sGuide",

http://in.mathworks.com

[18]. MathWorks, Inc., "Getting Started with Android™Devices", http://in.mathworks.com/help/supportpkg/android/

[19]. DIBCO 2017, "ICDAR 2017 Document ImageBinarizationCOmpetition", https://vc.ee.duth.gr/dibco2017/

,