

CYBER BULLING DETECTION USING MACHINE LEARNING

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ABSTRACT

Cyberbullying has emerged as a pervasive and concerning issue on social media platforms, impacting the mental health and well-being of individuals worldwide. To address this problem, this study proposes a cyberbullying detection system using the Support Vector Machine (SVM) algorithm. Leveraging the power of machine learning, the system aims to automatically identify and flag instances of cyberbullying in social media content. The development of the detection system begins with the collection and labelling of a comprehensive dataset containing examples of cyberbullying and non-cyberbullying posts or comments. After pre-processing the text data by removing irrelevant information, converting text to lowercase, and tokenizing it, meaningful features are extracted using the bag-of-words or TF-IDF techniques. These transformed feature vectors serve as inputs for training the SVM classifier, which seeks to find the optimal hyper plane for effectively distinguishing cyberbullying from non-cyberbullying content. The performance of the SVM model is evaluated using a separate testing dataset, with metrics such as accuracy, precision, recall, F1-score, and ROC-AUC analysed to assess its effectiveness in identifying cyberbullying instances. Model fine-tuning is conducted through experimentation with various SVM hyper parameters and cross-validation techniques to optimize performance.

Keyword: - Fire detection, Alert message, Image processing, Machine learning, SMTP.

1. Introduction

Cyberbullying, a pervasive issue in today's digital age, refers to the use of electronic communication to bully, harass, or intimidate others. It can take various forms, including mean comments, spreading rumors, sharing embarrassing images, and more, all conducted through online platforms such as social media, messaging apps, forums, and emails. With the anonymity and ubiquity of the internet, cyberbullying has become a significant concern, particularly among adolescents and young adults, leading to psychological distress, social isolation, and even tragic consequences like self-harm or suicide. Traditional methods of combating cyberbullying often rely on manual monitoring and intervention, which can be labor-intensive, time-consuming, and sometimes ineffective due to the sheer volume of online content. Machine learning (ML) offers a promising solution by automating the detection of cyberbullying instances, enabling faster response times and more comprehensive coverage of online spaces.

1.1 Statement of the problem

The problem at hand is to develop an effective and reliable cyberbullying detection system for social media platforms using Machine Learning (ML) techniques. With the rapid growth of social media usage, cyberbullying has become a pressing concern, causing emotional distress, social isolation, and even potential harm to victims.

1.2 Objectives

The system should effectively distinguish cyberbullying from non-cyberbullying posts or comments, minimizing false positives and false negatives. The system should be capable of detecting cyberbullying in real-time, enabling prompt intervention and prevention of harm. The system should be able to detect cyberbullying across different languages, catering to a wider user base and addressing global cyberbullying concerns

2. System Overview

The system is developed by python language and using with machine learning to detect the bad or good comments in social media.so create a website using SVM Algorithm with 80% accuracy. It have also used html, css, JavaScript to create webpage as front end. There are used python modules like pandas, matplotlib ,Numpy.Tkinter ...

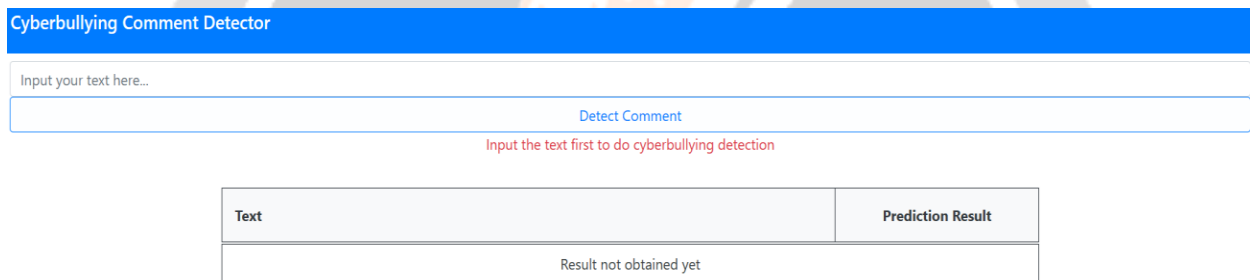


Fig -1: System Screenshot

2.1 Bulling Detector

The bulling detector is used to find the bad comments bottom of post or other in social media and it can copy and paste through in the command detector then it will show bulling in the website.

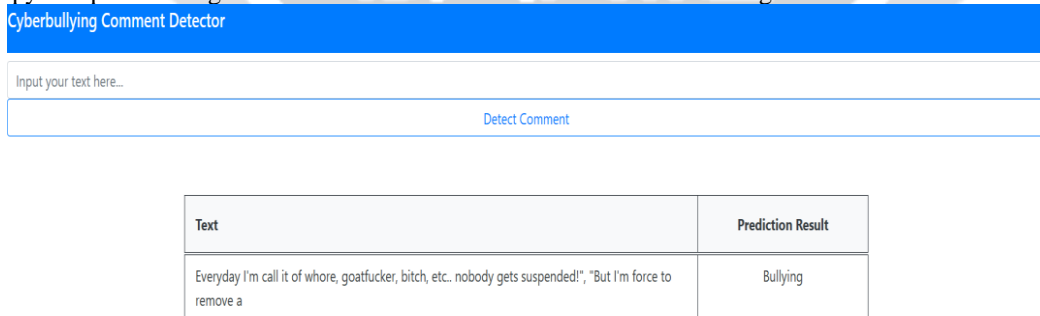


Fig -1: Sample of bulling detector

2.2 Non bulling detector

The bulling detector is used to find the good comments bottom of post or other in social media and it can copy and paste through in the command detector then it will show bulling in the website.

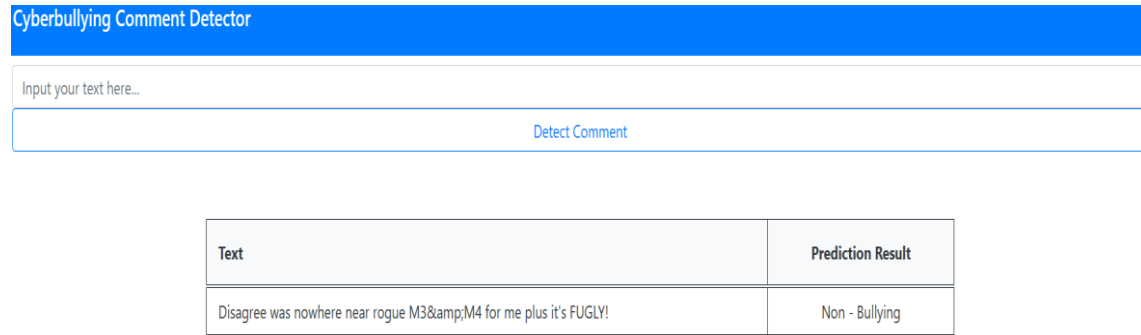


Fig -2: sample of Non Bullying detector

3. Methodology

Data Collection: Gather a diverse dataset containing examples of cyberbullying instances and non-bullying instances. This dataset should include various forms of cyberbullying, such as text-based (e.g., social media posts, comments), image-based (e.g., memes, edited photos), and possibly other multimedia types.

Data Preprocessing: Clean and preprocess the data to prepare it for analysis. This step may include tasks such as removing irrelevant information, tokenization, stemming or lemmatization, removing stop words, and handling any missing or noisy data.

Feature Extraction: Extract relevant features from the data that can be used to train the machine learning model. For text data, features might include word frequencies, n-grams, sentiment scores, or semantic features. For image data, features might include color histograms, texture features, or deep learning-based features extracted from pre-trained models.

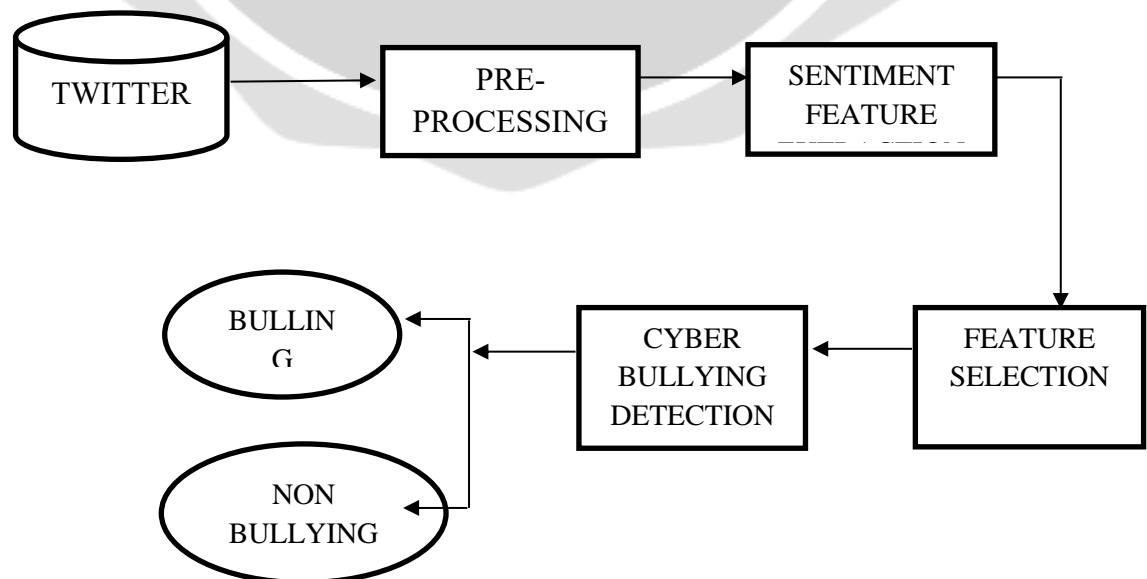
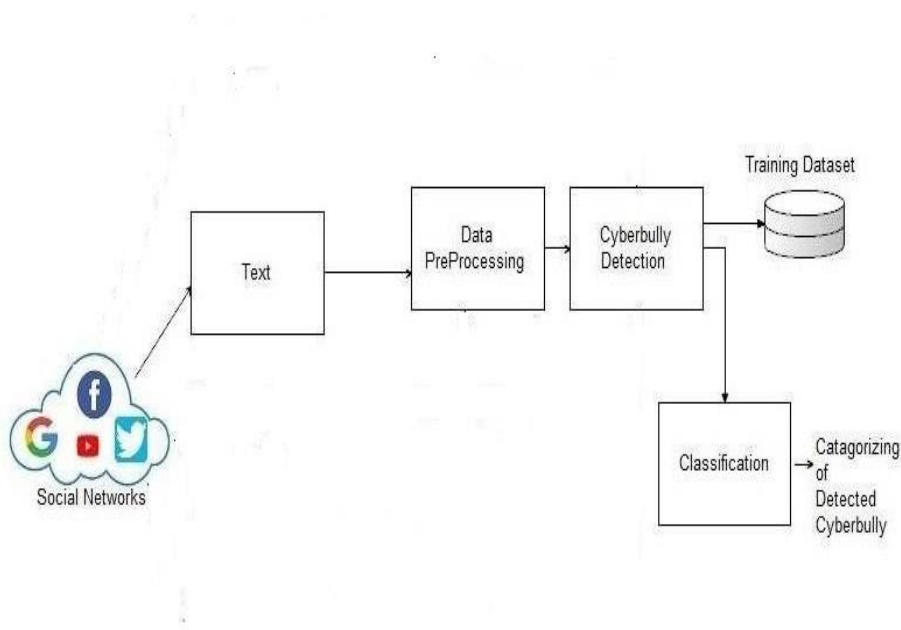


Chart -1: Workflow chart**3.1 Architecture diagram**

Below is the architecture diagram to show how the system works.

**4. CONCLUSIONS**

In conclusion, the proposed cyberbullying detection system, utilizing the Support Vector Machine (SVM) algorithm, offers a robust and efficient solution to address the growing concern of cyberbullying on social media platforms. By leveraging machine learning techniques, the system can automatically identify instances of cyberbullying in social media content, providing timely alerts and support to users facing potential cyberbullying incidents. The implementation of the system involves several essential modules, including data loading, data pre-processing, feature selection, SVM training, testing, evaluation, and performance analysis. The proposed system for fire detection using image processing and machine learning was found to be an effective method for detecting fire and provides more accurate results. And the flexible messaging service integrated with the system acts as a primary alerting system for alerting people in various locations and save them from fire accidents.

5. ACKNOWLEDGEMENT

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