AMRUTVAHINI COLLEGE OF ENGINEERING, SANGAMNER

DEPARTMENT OF COMPUTER ENGINEERING

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Project Synopsis
on

"Cyberbullying Detection Using Machine Learning"

BE Computer Engineering

BY

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- **Title:Cyberbullying Detection Using Machine Learning**

- **Domain: Artificial Intelligence**

- **Sub-domain: Machine Learning**

- **Objectives:**

  1. To identify the cyberbullying text and also take its meaning into consideration

  2. To control cyberbullying on social platforms and make healthy communication

- **Abstract:**
  Technology, as we know, is a double-edged sword, where the users are continuously balancing between the risks and opportunities it offers. Social media become a very important factor of our life nowdays, we all spent lot of time on social media for entertainment, communication, to get knowledge, etc. But the other side of social media is trolling, harrasment and abusing the people through the negative comments and because of this negative comments people get depress and in worst condition they may also attempt suicide. So by identifying this kind of comments by using the machine learning algorithms and natural language processing we can identify the bullying text and take one step forword to stop cyberbullying.

- **Keywords:**
  Natural Language Processing, Machine Learning, Cyberbullying, Random Forest Classifier, Decision Tree,Stochastic Gradient Classifier

- **Problem Definition:**
  Social networks Networks give us great opportunities to communicate but due to sending negative comments and abusing people, social media become threat to user. The goal of this project to detect the negative/abusive comments by using Machine learning algorithm and Natural Language Processing.

- **List of Modules:**

  1. Preprocessing

2. Stop Word Removal

3. Tokenization

4. Feature Extraction

- **Current Market Survey:**
  Around 85 per cent of Indian children have reported being cyberbullied as well as having cyberbullied someone else at rates well over twice the international average, according to a Cyberbullying report released on Sunday. Cyberbullying includes racism, trolling, personal attacks and sexual harassment, among others. The survey was conducted between June 15 to July covering 11,687 parents and their children across 10 countries.Indian children said that they are more likely to be cyberbullied by strangers compared to other children around the world, at 70 per cent in India versus 45 per cent worldwide.

- **Scope of the Project:**
  We are generating the application which is use to understand and detect the negative comments,messages on social media network which will help to reduce the trolling and harassing the people through the negative comments and also increasing the healthy conversation between the users on social media.

- **Literature Survey:**
  [1] R. R. Dalvi, S. Baliram Chavan and A. Halbe,Detecting A Twitter Cyberbullying UsingMachine Learning,
  ICICCS, pp. 297-301, doi:10.1109/ICICCS48265.2020.9120893. (2020):
  A machine learning model is proposed to detect and prevent bullying on Twitter. Two classifiers i.e. SVM and Naïve Bayes are used for training and testing the social media bullying content. Both Naive Bayes and SVM (Support Vector Machine) were able to detect the true positives with 71.25respectively. But SVM outperforms Naive Bayes of similar work on the same dataset. Also, Twitter API is used to fetch tweets and tweets are passed to the model to detect whether the tweets are bullying or not.

  [2] Trana R.E., Gomez C.E., Adler R.F. (2021)Fighting Cyberbullying: An Analysis ofAlgorithms Used to Detect Harassing Text Found on YouTube. In:

Ahram T. (eds) Advances in Artificial Intelligence, Software and Systems Engineering. AHFE 2020. Advances in Intelligent Systems andComputing, vol 1213. Springer, Cham. https://doi.org/10.1007/978-3-030-51328-3_2.(2020):
We report on the efficacy of three machine learning classifiers, naive Bayes, Support Vector Machine, and a convolutional neural network applied to a YouTube dataset, and compare the results to an existing Formspring dataset. Additionally, we investigate algorithms for detecting cyberbullying in topic-based subgroups within the YouTube corpus.

[3] J. Yadav, D. Kumar and D. Chauhan, Cyberbullying Detection using Pre-Trained BERT Model, ICESC, pp. 1096-1100, doi:10.1109/ICESC48915.2020.9155700. (2020):
A new approach is proposed to cyberbullying detection in social media platforms by using the novel pre-trained BERT model with a single linear neural network layer on top as a classifier, which improves over the existing results. The model is trained and evaluated on two social media datasets of which one dataset is small size and the second dataset is relatively larger size.

[4] K. Wang, Q. Xiong, C. Wu, M. 6Gao, and Y. Yu, "Multi-modal cy- berbullying detection on social networks," in 2020 International Joint Conference on Neural Networks (IJCNN). IEEE, 2020, pp. 1-8.:
we propose a multi-modal detection framework that takes into multi-modal information(e.g., image, video, comments, time) on social networks. Specifically, we not only extract textual features but also use the hierarchical attention networks to capture the session feature in social networks and encode several media information(e.g., video, image). Based on these features, we model the multi-modal cyberbullying detection framework to solve the new form of cyberbullying. Experimental analysis on two real-world datasets shows that our framework outperforms several existing state-of-the-art models.

- **Software and Hardware Requirement of the Project:**
  Software:

  1. Python3.9 or above

2. Anaconda

3. Jupyter notebook

Hardware:

1. Ram :- 8GB

2. Rom :- 256 GB ssd

3. processor :- 3.0 GHZ

- **Contribution to Society:**
  By detecting the cyberbullying comments we can provide the restrictions so people are unable to abuse, troll the user on social media.

- **Probable Date of Project Completion:** April 2023

- **Outcome of the Project:**

  1. To find offensive and non-offensive comments from dataset

  2. To reduce cyberbullying on social media

  3. To educate and warn teenagers/adults about cybetbullying