

A panoramic Survey to identify Cyberbullying by utilising Data Mining Methodologies

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ABSTRACT

Every aspect of contemporary life is significantly influenced by the internet, thereby rendering it simpler to connect individuals all over the world to communicate information to an extensive demographic. No one may have imagined initially that the internet would be the heart of numerous incredible services, notably social networking. Today, we may contend that social networking sites and web-based applications have integrated seamlessly into people's lives. Technology development and advancement not only had a good effect but also, when used improperly, created new issues. This is frequently described as cybercrime. Cyberbullying is a prevalent form of cybercrime today. Cyberbullying is a type of online crime that involves the purposeful use of the internet and other means for information technology. The deliberate use of the internet and other information technology resources to offend, humiliate, harass, bully, and threaten people online is known as cyberbullying. Bullying someone on social media functions similarly to making threats, slandering them, and reprimanding them. Cyberbullying has significantly increased mental health issues, particularly in the younger age. Lower self-esteem and a rise in suicide thoughts are the results. Although it has been a problem for a while, its impact on youngsters has recently gained popularity. This research study has reviewed the work on cyberbullying done by several scholars and elaborated on the various approaches they used to identify bullying.

Keywords: Catfishing, Cyberbullying, Denigration, Dissing, Exclusion, Flaming , Fraping, Impersonation, Internet stalking.

INTRODUCTION

Online information sharing is popular among the millions of young people who spend their time on social networking sites. The popularity of social media has grown substantially over time as a result of the development of the Internet and has now surpassed all other forms of communication in the twenty-first century as a whole. Willard (2007) states that some forms of cyberbullying include flaming, which is a

brief online argument involving foul language, harassing, which is sending someone offensive messages repeatedly, slandering, which is disseminating false rumours, masquerading, which is pretending to be someone else, and exclusion, which is purposefully keeping someone away from an online group. In particular, for women and children, cyberbullying frequently causes serious mental and physical depressions and even suicide attempts. This type of behaviour can make victims depressed and develop other serious, potentially fatal issues. Several researchers worked on cyberbullying and describe various approaches to identity cyber bullying (Biggs et al.,2010, Kaplan and Michael, H.2010,

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Dinakar *et al.*,2012, Nahar *et al.*, 2012, 2013, Bengio *et al.*,2013, Davidar *et al.*,2013, Singh and Kaur, 2019). To manage this activity, researchers and cyber-security organisations must pay close attention. Bullying can recur at any time or by spreading an offensive post among numerous people. In order to analyse the user reports of cyberbullying, we emphasize on Facebook. With about 3 billion monthly users, Facebook is the most ubiquitous social networking platform. This indicates that 37% or so of people on Earth use Facebook. In terms of social media platforms, Facebook is the undisputed heavyweight champion (Fig.1).

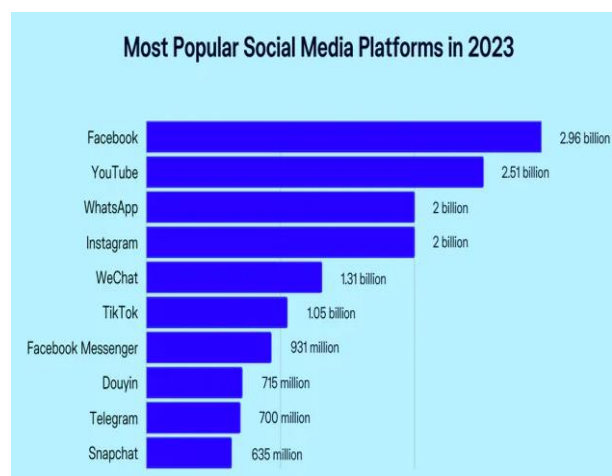


Figure1. Most Popular Social Media Platforms

Types of Cyberbullying (Fig.2)

Harassment

Harassment happens when a bully uses electronic communication to send their target offensive and threatening communications. In certain cases, a group of people might collaborate together to send the victim thousands of texts all at once.

Impersonation

Impersonation is the act of making a false profile or hacking into another person's account under that person's name. The cyberbully harms the reputation of the victim by posing as the victim online.

Flaming

Flame wars occur when people repeatedly send "angry, rude, or obscene [electronic] messages" to one another.

Denigration

Denigration is an internet attack on someone's reputation or friendships that involves spreading untrue allegations or gossip.

Exclusion

When someone is purposefully left out of online group activities like group chats and multiplayer games, they have been excluded from the group.

Outing

When a victim of cyberbullying is outed, the perpetrator utilises technology to "[share] private information without permission with the intent to hurt" the victim.

Trickery

The cyber bully may use deceitful tactics to make their victim think they are sharing sensitive material, such secrets or humiliating details, in private with a close friend. Once the cyberbully has the material, he or she will use it against the victim by publicly sharing it with others "in an attempt to shame the victim". Outing and deceit are two types of cyberbullying that frequently go hand in hand.

Internet stalking

Harassment takes the form of cyberstalking. Cyber bullies frequently send threatening and intimidating electronic messages to their victims. Victims may frequently begin to feel as though "the intimidator can move offline and harm them physically," which makes them too wary of their surroundings.

Fraping

Fraping is when someone accesses your social media account and posts offensive stuff under the victim's name.

Dissing

Dissing is the practise of emailing or publishing hurtful remarks about your child online in an effort to harm their reputation or social relationships.

Catfishing

Catfishing is the practise of using your child's online identity, typically images, to build false social networking identities

TABLE I COMPUTERIZED TECHNIQUES TO PREDICT VARIOUS CYBER BULLYING PATTERNS

Year	Title and Authors Name	Techniques	Inference
2022	Patil, Anuj & Patil, Anklesh & Devhare, Jivan. 2022. Cyberbullying Detection in social media Using Supervised ML & NLP Techniques. International Journal for Research in Applied Science and Engineering Technology. 10. 469-471. 10.22214/ijraset.2022.46219.	Naive Bayes classifier	The use of supervised learning is suggested as a method for identifying and stopping cyberbullying on Twitter.
2021	Aditya Desai, Shashank Kalaskar, Omkar Kumbhar, and Rashmi Dhupal.2021 Cyber Bullying Detection on social media using Machine Learning. ITM Web of Conferences, 2021, p. 03038	BERT model	Based on the five characteristics that the BERT model might utilise to describe a cyberbullying post or message, the authors suggested a semi-supervised method for identifying cyberbullying.
2020	Sanmit Vartak, Ajinkya Vaydande, Jagruti Varule. 2010. Prediction of Cyberbullying Incident on Social Media Network. International Research Journal of Engineering and Technology (IRJET). Volume: 07 Issue: 04 : 3334-3337.	Support Vector Machine (SVM) with n-grams	The purpose of this paper is to discuss the problem of online bullying in media-based social networks.
2021	Kargutkar, Saloni. 2021. Implementation of Cyberbullying Detection using Machine Learning Techniques. International Journal for Research in Applied Science and Engineering Technology. 9. 290-294. 10.22214 / ijraset.2021.33229 -	DNN based model	This study aims to identify instances of cyberbullying on social media sites.
2022	Islam, Manowarul, Uddin, Md Ashraf, Islam, Linta, Akhter, Arnisha, Sharmin, Selina and Acharjee, Uzzal. 2021. Cyberbullying Detection on Social Networks Using Machine Learning Approaches. 10.1109/CSDE50874.2020.9411601.	Naïve Bayes (NB), Logistic Regression (LR), Support Vector Machine (SVM) and Random Forest (RF) classifier	The authors of this research examine the effectiveness of combining machine learning and natural language processing to detect cyberbullying on social media.
2022	Sara Kangane , Priyanka Thorat , Sejal Indalkar , Pratiksha Yewale , Disha Deotale. 2022. Detection of Cyber bullying on Social Media Using Machine Learning. nternational Journal for Research in Applied Science & Engineering Technology. (IJRASET). Volume 10 Issue VI J: 1530-1535.	Support Vector Machine classifier, LR classifier	The authors suggested a method for identifying tweets in Hindi and English on Twitter.

2017	Kasim, Hariani and Riadi, Imam. 2017. Detection Of Cyberbullying On Social Media Using Data Mining Techniques. International Journal of Computer Science and Information Security,. 15. 244-250.	Naive Bayes Classifier	The goal of this model is to identify instances of cyberbullying, which are particularly prevalent on social media platforms like Twitter between November and December 2016 and frequently involve psychological issues.
2020	ALIYU, NASIRU & Abdulrahaman, Musbau & Ajibade, Fatimah and Abdurauf, Tosho. 2020. Analysis of Cyber Bullying on Facebook Using Text Mining. Journal of Applied Artificial Intelligence. 1. 1-12. 10.48185/jaai.v1i1.30.	Naive Bayes Classifier	This experimental analysis's findings demonstrate the effectiveness of Nave Bayes in categorising every Facebook post into a bully or non-bully word and in determining the type of bully word that is being posted.
2021	Mahesh, K. & Gothane, Suwarna & Toshniwal, Aashish & Nagarale, Vinay and Gopu, Harish. 2021. Cyber Bullying Detection on Social Media using Machine Learning. International Journal of Scientific Research in Computer Science, Engineering and Information Technology. 410-416. 10.32628/CSEIT21738 .	Support Vector Machine and Naive Bayes.	Supervised Binary Classification Machine Learning techniques are suggested as a method for identifying and stopping Twitter cyberbullying.
2019	Balakrishnan, Vimala, Khan, Shahzaib, Fernandez, Terence and Arabnia, Hamid. 2019. Cyberbullying detection on twitter using Big Five and Dark Triad features. Personality and Individual Differences. 141. 252-257. 10.1016/j.paid.2019.01.024. c	Random Forest	With the help of users' personalities as assessed by the Big Five and Dark Triad models, this study enhanced the effectiveness of the cyberbullying detection mechanism (compared to a model using simply Twitter features).

Table 1 gives a review of earlier works on computerized techniques to predict cyber bullying patterns.

CYBER BULLYING DATASET REPOSITORY AND ITS URL

The Cyber bullying related dataset can be collected from different sources for Analyzing and to detect the cyberbullying. Table 2. displays a portion of the connection for cybercrime information assortment.

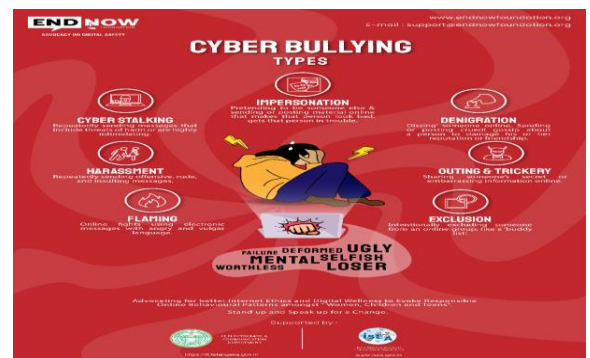


Figure 2. Cyber bullying types

TABLE 2. CYBERBULLYING INFOASSORTMENT

Sno.	Source Name	URL Address
1	National CrimeRecord Bureau(NCRB)	https://ncrb.gov.in/
2	DataWorld	https://data.world/datasets
3	UCIRepository	http://archive.ics.uci.edu/ml/datasets
4	Kaggle	https://www.kaggle.com
5	Data.govin	https://data.gov.in
6	Knoema	https://knoema.com
7	India open data census	https://in-city.census.okfn.org/dataset
8	Springboardblog	https://springboard.com
9	Socrata	https://www.tylertech.com/products/socrata

CONCLUSION

Numerous juvenile suicides throughout the world have been caused by cyberbullying, a major internet crime. One of the social media sites where cyberbullying occurs is Facebook, which has a privacy policy that lets users' control who may see their posts and comments. However, many users are unaware of this policy. We can deal with the crimes that are perpetrated on these platforms extremely effectively if we can identify posts like these that are inappropriate for kids or young adults. Numerous algorithms were employed to find the cyberbullying remarks. The purpose of the study is to look at the automatic detection of social media posts involving cyberbullying.

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