Nature Of CyberBullying And Strategies For Prevention

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1 Introduction

2 Related Works

Dehue et al.[3] reported the results of a survey on the frequency, type, and parental views of child and adolescent cyberbullying. 1,211 final-year primary school students, first-year secondary school students at all levels, and their parents received two questionnaires one for children and one for their parents. Students filled out the surveys in their parents did them outside of the classroom. The findings demonstrate that around 16 percent of the Bullying among children has occurred through the Internet and through text messages, while roughly 23 percent of The children had experienced cyberbullying. Dehue et al.[3] found out that majority of home-based cyberbullying appears to be an anonymous, individualistic behaviour.Vandebosch et al.[17] collected data from 53 focus groups including students aged 10 to 18 demonstrate that children frequently perceive "cyberbullying" as "Internet bullying" and relate the issue with a wide range of behaviours. These activities must fulfil a number of requirements in order to be termed "genuine" cyberbullying. They must be meant to injure (by the offender) and seen to be painful (by the victim); be part of a pattern of bad offline or online activities; and be carried out in a power imbalanced relationship.Slonje et al.[13] examined some recent discoveries and explored broad principles in the field. Slonje et al.[13] covered definitional issues such as repetition and power imbalance, types of cyberbullying, age and gender differences, overlap with traditional bullying and sequence of events, differences between cyberbullying and traditional bullying, motives for and impact of cyber victimization, coping strategies, and prevention/intervention possibilities.Cyberbullying is becoming more common in our culture as technology progresses. Bullying can occur at any time of day or night via text message, email, or social networking sites. To lower cyberbullying rates, Crosslin et al.[2] advocated a multi-level Socio-Ecological strategy. Furthermore, evaluatived study on what works and what does not in cyberbullying prevention is required.Cyberbullying is a severe public health issue that affects young people. Adults lack firsthand experience

with social media in their childhood, necessitating the involvement of adolescent voices in attempts to understand and solve cyberbullying. The purposed study by Dennehy et al.[4] was to combine qualitative studies that investigated young people's conceptualizations of the nature of cyberbullying in order to guide conceptual and intervention development.According to Helfrich et al.[6], both victims and offenders of cyberbullying are at risk for a variety of psychological issues, including depressed symptoms and suicide thinking. While the majority of cyberbullying among kids happens at home, there is little research on the significance of parental engagement in preventative and intervention efforts. The current study's aims were to (1) discover effective protective methods used by parents to assist children avoid cyberbullying engagement and (2) identify techniques used by parents to help youth improve coping capacity when cyberbullying involvement does occur.

Cyberbullying is a form of bullying, which is a form of aggressiveness. Smith et al.[14] provided a brief history of research, addressed definitional concerns surrounding cyberbullying, and three research obstacles; Smith et al.[14] then analysed some basic results about prevalence, age and gender variations, predictors of engagement, and impacts and correlates of involvement. Smith et al.[14] finished with data on whether cyberbullying is becoming more prevalent, coping techniques, resources, guidance, and intervention.Technology has changed teenage life, especially how they bully one another. This new kind of bullying, also known as electronic bullying, online bullying, or cyberbullying, involves the use of e-mail, instant messaging, Web sites, voting booths, and chat or bash rooms to purposefully pick on and punish others. To combat cyberbullying, educators must first grasp its nature and be aware of the activities they may take to avoid cyberbullying in schools.439 college students were asked how frequently they had experienced each of a series of bullying practises since starting college. According to the findings by MacDonald et al.[10] , 38 percent of college students knew someone who had been cyberbullied, 21.9 percent had been cyberbullied, and 8.6 percent had been cyberbullied. It was clear that some kinds of electronic media were more frequently utilised to cyberbully others than others. All cyberbullying and conventional bullying behaviours were shown to be strongly positively associated. In any of the cyberbullying behaviours, there were no significant gender or ethnic group differences.Bullying via mobile phones and the internet is referred to as cyberbullying. The majority of past research has concentrated on the prevalence of text message and email bullying. Cyberbullying is a significant new type of bullying that differs from traditional bullying in certain ways. A lot happens outside of school. The implications for research and practise are highlighted by Smith et al.[15]

Bullies can utilise social networks to target victims because they create a rich environment for them to do so. Given the implications of cyberbullying on victims, appropriate measures to detect and prevent it are required. Machine learning may be used to recognise bully language patterns and therefore create a model to detect cyberbullying acts automatically. Hani et al.[5] suggested a supervised machine learning method for recognising and combating cyberbullying. A variety of classifiers are used to learn and classify bullying behaviours.

The examination of the suggested technique on the cyberbullying dataset reveals that Neural Network works better and obtains 92.8 percent accuracy, while SVM reaches 90.3. NN also beats other classifiers that have done similar work on the same dataset.Existing research indicates that the rising use of Information and Communication Technologies (ICT) has created new venues for cyberbullying. Li et al.[9] employed Sina Weibo as a case study, concentrating on the linguistic elements that occur in cyberbullying as well as the machine method system that should be incorporated as principles for controlling and regulating cyberbullying contents on social media. Inductive content analysis was utilised to analyse objectionable language characteristics from the selected samples based on the Language Management Theory (LMT). Li et al.[9] findings will aid in the refinement of theories, particularly those on offensive information and behaviour, as well as academic knowledge of cyberbullying and media, including detection, regulation, and governance.Ioannou et al.[7] summarised current trends in order to promote conversation and study with a broader scope; Ioannou et al.[7] urged for greater research attacking the problem by using statistical models and computational processes targeted to identify, intervene, and prevent cyberbullying. Combining intelligence approaches with specific online technology issues can aid in combating this societal scourge.The QC technique provides for exploratory investigation of problems in classroom settings, in which students engage in a problem-solving activity over time. Through participation in a series of workshops, participants identify significant issues and prioritise concerns, analyse difficulties, and provide solutions. The goal of Paul et al.[12] was to delve more into the usage of QCs as an effective way of obtaining information about bullying and cyberbullying in schools, and how these may have altered over the course of one academic year.Cyberbullying is a new type of bullying that has emerged as a result of the digital era. The majority of teenagers use some form of social media service, which has resulted in widespread cyberbullying and, in some severe cases, victim suicide. We want to demonstrate the outcomes of the system we created for automatic monitoring and prevention of cyberbullying in this article by Sugandhi et al.[16]. The response grading system considers the degree of bullying and provided acceptable replies.

The scope and character of cyberbullying in 23 Portuguese schools were investigated by Matos et al.[11]. A self-response questionnaire was completed by 3,525 sixth, eighth, and eleventh grade students to analyse their perspectives and experiences with cyberbullying. According to the statistics, 7.6 percent of kids have been bullied, and 3.9 percent have bullied others at least once in the previous year. Females and older students were more likely to be victims of victimisation.The goal of this research by Abaido et al.[1] is to investigate the prevalence of cyberbullying among Arab university students, its kind and venues, and their attitudes regarding reporting cyberbullying vs keeping silent. Data were gathered from 200 UAE students.The increasing availability, use, and reliance on information and communications technology (ICT) among young people Smith et al., 2008 has been accompanied by the potential for such technologies to be abused to bully others, a type of aggression known as 'cyberbullying' (Belsey, 2006; Hinduja, Patchin, 2007; Smith et al.,) 2008). Ac-

cording to some researchers' definitions, cyberbullying occurs when, over time, an individual or a group uses ICT to purposefully injure a person, who finds it difficult to stop the bullying.Li et al.[8] looked on the nature and scope of cyberbullying in adolescence. A survey of 177 seventh-grade pupils in an urban city is done. Bullying using electronic communication technologies is referred to as "cyberbullying" in this research. According to the findings, about 54 percent of the pupils had been victims of conventional bullying, and more than a quarter had been cyberbullied. Almost one-third of pupils had harassed others in the conventional sense, and almost 15 percent had tormented others using internet communication methods. Almost 60 percent of internet victims are female, whereas more than 52 percent of cyber bullies are male. The vast majority of victims and witnesses of cyberbullying did not report the occurrences to adults.

Author	Key Contribution	Frame Work	Quantitative Analysis	Practical Strategy	Machine Learning	Case Study	Parent Perception	Student Perception	Future Scope
Dehue et al.[1]	This study discovered a larger number of guys who bullied and a higher percentage of girls who were bullied. The percentage of parents who set boundaries for their children's Internet and text messaging use did not diverge significantly from other findings	Yes*	No	No	No	Yes	Yes	Yes	No
Vandebosch et al.[2]	According to the focus groups, young people may identify a wide range of bad Internet and mobile phone activities. Strangers contacting them is at the top of their priority list. Other, less commonly stated aspects include virus infection, hacking, pedophilic efforts, and cyberbullying	Yes	No	No	No	Yes	No	Yes	No

Table 1 continued from previous page

Author	Key Contribution	Frame Work	Quantitative Analysis	Practical Strategy	Machine Learning	Case Study	Parent Perception	Student Perception	Future Scope
Slonje et al.[3]	Research is active and has produced much, it faces several significant hurdles. Definitional and measurement difficulties, in particular, need to be addressed more thoroughly.	Yes	Yes	Yes	No	Yes	No	No	Yes
Smith et al.[4]	In this research paper types of victimisation are listed and differences between traditional bullying	Yes	Yes	No	No	No	No	No	Yes
Beale et al.[5]	The article mostly focused on parents and what they can do to when their children get involved in cyberbullying	No	Yes	No	No	Yes	Yes	No	Yes
Baldry et al.[6]	Risk factors for cyberbullying and cybervictimization according to the ecological framework	Yes	Yes	Yes	No	Yes	No	No	Yes
Hani et al.[7]	The proposed approach helps to detect cyberbullying in social media by using the vast data set provided and classifies the accuray and precision	Yes	No	Yes	Yes	No	No	No	Yes

Table 1 continued from previous page

Author	Key Contribution	Frame Work	Quantitative Analysis	Practical Strategy	Machine Learning	Case Study	Parent Perception	Student Perception	Future Scope
Matos et al.[8]	The findings of this study have significant consequences and highlight the need for parents and schools to collaborate in devising a coordinated solution to the problem. Establishing and keeping open lines of communication between school and home appears to be critical.	Yes	Yes	No	No	Yes	Yes	No	Yes
Li et al.[9]	The author believes that this study provides a review of cyberbullying definitions and emphasises a novel component to identify and control cyberbullying within linguistic characteristics in the social science community	Yes	No	Yes	Yes	No	No	No	Yes
Crosslin et al.[10]	Other papers focus mostly on specific age, race and country but this paper focuses on college students	Yes	No	No	No	Yes	No	Yes	Yes

Table 1 continued from previous page

Author	Key Contribution	Frame Work	Quantitative Analysis	Practical Strategy	Machine Learning	Case Study	Parent Perception	Student Perception	Future Scope
Abaido et al.[11]	Author investigated the prevalence of cyberbullying among Arab university students, its kind and venues, and their attitudes regarding reporting cyberbullying vs keeping silent	Yes	Yes	No	No	Yes	No	Yes	Yes
Ioannou et al.[12]	Summarized current trends in order to promote conversation and study with a broader scope	Yes	Yes	Yes	No	No	No	No	Yes
MacDonald et al.[13]	All cyberbullying and conventional bullying behaviours were shown to be strongly positively associated. In any of the cyberbullying behaviours, there were no significant gender or ethnic group differences.	Yes	Yes	No	No	Yes	No	Yes	Yes

Table 1 continued from previous page

Author	Key Contribution	Frame Work	Quantitative Analysis	Practical Strategy	Machine Learning	Case Study	Parent Perception	Student Perception	Future Scope
Pearce et al.[14]	A variety of ways for directing school investment to prevent bullying and cyberbullying behaviours have been identified. These intervention options were classified into six major whole-school indicators	Yes	Yes	Yes	No	Yes	No	Yes	Yes
Dennehy et al.[15]	The purposed study was to combine qualitative studies that investigated young people's conceptualizations of the nature of cyberbullying in order to guide conceptual and intervention development.	Yes	Yes	No	No	Yes	No	Yes	Yes
Helfrich et al.[16]	Discoverd effective protective methods used by parents to assist children avoid cyberbullying engagement and (2) identify techniques used by parents to help youth improve coping capacity when cyberbullying involvement does occur.	Yes	Yes	No	No	Yes	Yes	No	Yes

Table 1 continued from previous page

Author	Key Contribution	Frame Work	Quantitative Analysis	Practical Strategy	Machine Learning	Case Study	Parent Perception	Student Perception	Future Scope
Paul et al.[17]	The QC technique provides for exploratory investigation of problems in classroom settings, in which students engage in a problem-solving activity over time	Yes	No	Yes	No	No	No	Yes	Yes
Li et al.[18]	The study looked on the nature and scope of cyberbullying in adolescence	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Sugandhi et al.[19]	A practical sloution to automatically moniter and prevent cyberbullying	Yes	Yes	Yes	Yes	No	No	No	Yes
Smith et al.[20]	The paper certainly explained the stages and types of bullying.Also speculated few possible solutions	Yes	Yes	Yes	No	Yes	No	Yes	Yes

3 Methodology

3.1 What is Cyber Bullying

Cyberbullying is defined as hurting, insulting, demeaning, trolling or purposely tormenting other people using modern means of communication over an extended period of time. Cyberbullying occurs either online through e-mail, instant messenger, social media, and videos on various portals or over the phone e.g. by WhatsApp or annoying calls and messages. Most of the time, the perpetrator, referred to as a "bully," and the bully always goes anonymous and a known person rarely in few cases.Cyber bullying is similar to traditional bullying. Instead of physical abuse here the bully uses Internet as a medium to torment the victim.

3.2 Problem Statement

Young people/Teenagers are extremely competent technology users, and they frequently lead the way in adopting new technologies to regular usage. Their technology knowledge, combined with the capacity to be online without much adult supervision, can lead to high-risk behaviours. Exposure to pornography, drugs, violence, and cyberbullying are examples of high-risk activities. Cyberbullying is the exact phenomenon of physical bullying which happens outside of schools. Teens who tend to be volatile at their age make these type of crimes and go away with it. There are various types of crimes involved in cyberbullying. In this paper we are going to assess the nature of cyberbullying and general prevention strategies.

Three research issues are addressed in this paper

1. How common is cyber bullying and what are the different forms of cyber bullying
2. Statistical analysis of cyber bullying around the world
3. What are some cyber bullying prevention and response strategies

3.3 Types of Cyber Bullying

1. Trolling
2. Harassment
3. Outing/Doxing
4. Trickery
5. Cyberstalking
6. Masquerading
7. Fraping
8. Dissing
9. Exclusion
10. Flaming

Trolling

By making offensive remarks online, a bully who wants to disturb others is engaging in trolling. While trolling may not necessarily be considered a form of cyberbullying, it may be when done with malicious and damaging intent. These bullies typically have little personal connection to their victims and are more disengaged from them.

Harassment

Many forms of cyberbullying fall under the wide category of harassment, but in general, it refers to a consistent pattern of cruel or threatening online communications made with the purpose to damage someone.

Outing/Doxing

The act of publicly disclosing private or sensitive information about someone without that person's consent in an effort to shame or humiliate them is referred to as outing, also known as doxing. This might include sharing preserved personal conversations in an online private group or disseminating private images or papers of famous people. The victim's lack of permission is crucial.

Trickery

Outing and trickery are comparable, with the addition of deceit. In these circumstances, the bully will approach their victim and deceive them into believing they are safe. Once the bully obtains the target's trust, they take advantage of it by disclosing the victim's secrets and personal information to one or more third parties.

Cyberstalking

Cyberstalking is a severe kind of online bullying that might include threats of actual damage to the targeted youngster. It frequently goes hand in hand with offline stalking and may include surveillance, fanciful charges, threats, etc. It is a crime, and the offender may face jail time, probation, or possibly a restraining order as punishment.

Masquerading

When a bully establishes a fake profile or identity online with the express intention of cyberbullying someone, this is known as masquerading. This can entail choosing a new identity and set of images to deceive the victim, as well as creating a false email account and social media presence. In these situations, the bully is frequently someone the victim knows well.

Fraping

When a bully posts offensive stuff using your child's name on social media, it's known as "framing." Friends posting amusing things to one other's accounts might be innocuous, but it also has the potential to be really destructive. For instance, a bully may post homophobic or racist remarks on someone else's profile to harm their reputation.

Dissing

Dissing is when a bully spreads hurtful information about their victim through public posts or private messaging in an effort to harm either their reputation or relationships with other people. In these circumstances, the bully frequently has a personal connection to the victim, either as a buddy or an acquaintance.

Exclusion

The purposeful omission of someone is known as exclusion. In addition to being used to bully a victim in real-world settings, exclusion may also be employed online. For instance, your child may be shut out of message threads or conversations that include common friends, or they may be refused entry or invitation to events while they witness other friends receiving them.

Flaming

When someone engages in this kind of online bullying, they either publish about it or send their target direct insults and vulgarity. Trolling and flaming are similar, but flaming typically involves a more direct assault on the target in an effort to inspire them to engage in online combat.

3.4 India vs World

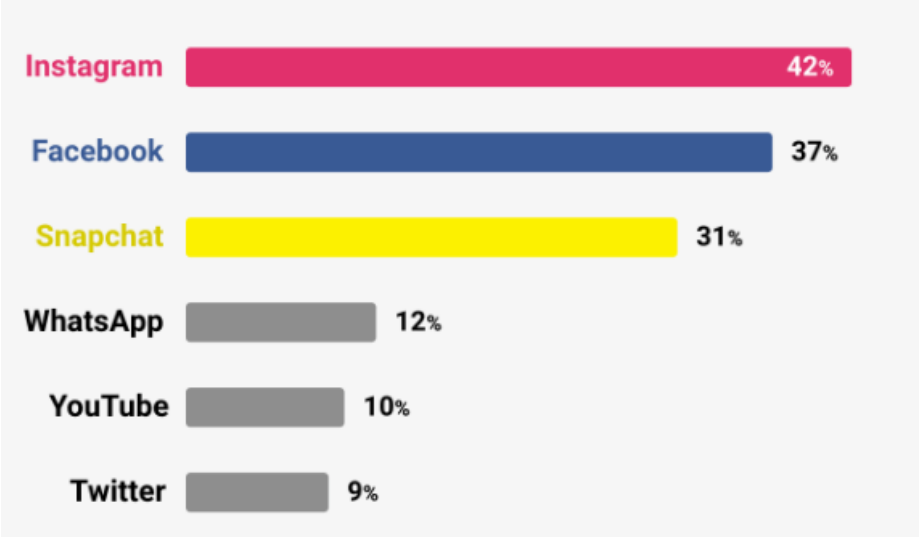
3.4.1 India

Cyberbullying may be carried out by strangers, pals from the internet, or peers. According to the 2016 Norton Cybersecurity Insights Report, 48 percent of parents worldwide believe that the chance of their children being bullied online is higher than it is offline.

Regrettably, India is quickly becoming the centre of cyberbullying worldwide. Here are some research that highlight issues with this threat. India came in third place for the most reported incidences of online bullying in a 2012 Microsoft Corporation assessment of 25 nations. In India, "half of the young had some experience with cyberbullying," according to a 2014 survey by the internet security company McAfee. **Anti-cyberbullying laws in India** In spite of the fact that India lacks particular legislation to address cyberbullying, the Information Technology Act's Section 66A does address the issue. This Act specifies the penalties for using digital and information communication technologies to

deliver obnoxious, abusive, or insulting communications. Other laws that can be utilised to combat cyberbullying are listed below:

- publishing or sending pornographic content—Section 67
- Electronic publication or transmission of sexually explicit material: Section 67A
- Word, gesture, or action designed to offend a woman's modesty - Section 509
- Sending slanderous e-mails in violation of Section 499 IPC
- Printing, selling, or promoting obscene, defamatory, or slanderous material or anything meant to be used as leverage - Section 292A
- Sec. 354D: Contacting or trying to contact a woman while stalking



3.4.2 World

Cyberbullying is described as "the practise of utilising the Internet, mobile phones or other devices to email or upload text or photos designed to injure or shame another person" by the US National Crime Prevention Council. Cyberbullying is the word used to describe harassment of a person who uses the Internet, a mobile phone, or other digital devices. It include doing things like humiliating the victim publicly, revealing private information online, sending unpleasant text messages, etc.
In a new survey released today by UNICEF and the UN Special Representative of the Secretary-General (SRSG) on Violence against Children, one in three young people in 30 countries said they had experienced online bullying, with one

in five saying they had missed school because of cyberbullying and violence.More than 170,000 U Reporters between the ages of 13 and 24 took part in the survey, including young people from France, Gambia, Ghana, India, Indonesia, Iraq, Jamaica, Kosovo, Liberia, Malawi, Malaysia, Mali, Moldova, Montenegro, Myanmar, Nigeria, Romania, Sierra Leone, Trinidad Tobago, Ukraine, Vietnam, and Zimbabwe.

Table 2: Percentage of parents that report their child has been a victim of cyberbullying. 2011-2018

Country	**2011**	**2016**	**2018**
India	32	32	32
Brazil	20	19	29
Unites States	15	34	26
Belgium	12	13	25
South Africa	10	25	26
Sweden	14	20	23
Canada	18	17	20
Turkey	5	14	20
Saudi Arabia	18	17	19
Australia	13	20	19
Mexico	8	20	18
Great Britain	11	15	18
Germany	7	9	14
Argentina	9	10	14
Italy	3	11	12
Poland	12	18	12
Spain	5	10	9
France	5	7	9
Russia	5	9	1

3.5 Discussion Of Existing Solutions

3.5.1 Student Coping Strategies

Students frequently mention technological coping techniques including banning persons online, altering one's account, password, or mobile phone number. Most studies show that only a small percentage of people really ask for help from others; if they do, they often inform a friend first, then a parent, and finally a teacher (Robert Slonje et al.)

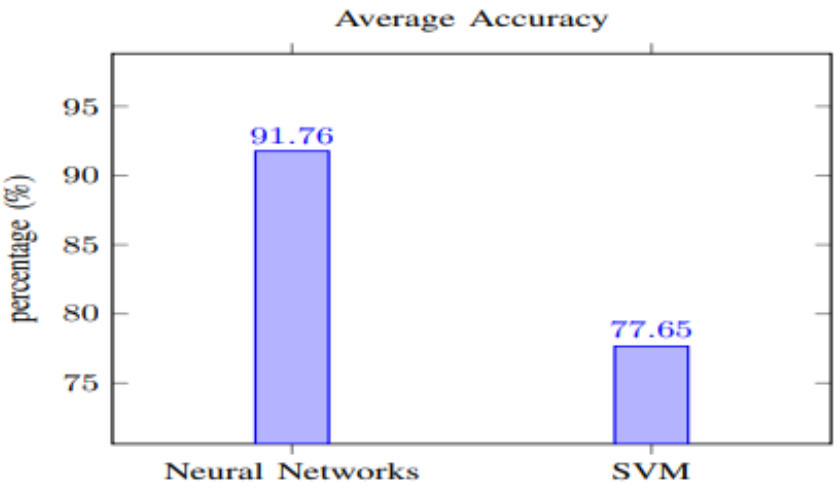
3.5.2 School-based intervention/prevention

School are the center for students and teens. Hence most of the communication takes place here. School are responsible for the conduct of any particular student. In the case of cyberbullying schools should intervene to help the victims. Schools should prevent cyberbullying and create a safe environment for students. If any students misconducts, schools or colleges should take action against the bully. Rather than suspending or dismissing the student, schools should adopt counselling methods to change the perception of bully.(Robert Slonje et al.) (beale et al.)

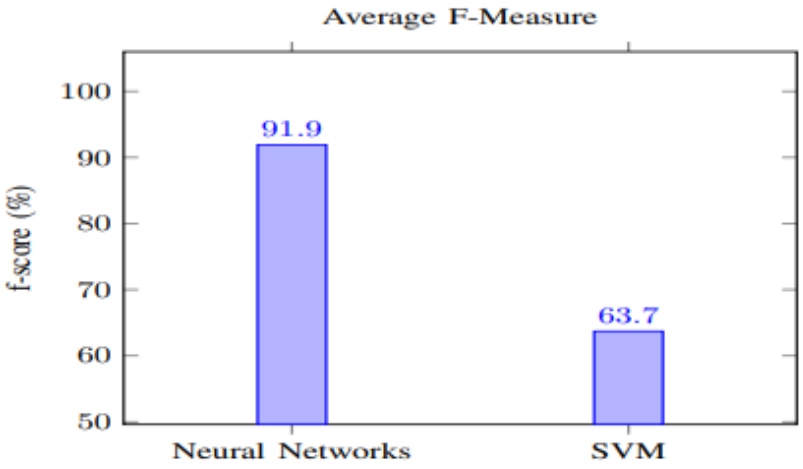
3.5.3 Technical Solutions

Most of the paper proposed theoretical solutions for cyber bullying,very few papers proposed technical solutions for cyber bullying.

- Hani et al. proposed a method for using machine learning to find cyberbullying. They utilised TFIDF and sentiment analysis techniques to extract features and two classifiers, SVM and neural networks, to evaluate our model. The categorizations were assessed using several n-gram language models. When combining TFIDF with sentiment analysis, they were able to obtain 92.8 ercent accuracy using a neural network with three gramme inputs and 90.3 percent accuracy using an SVM with four gramme inputs. They discovered that their neural network outperformed the SVM classifier since it also produces an average f-score of 91.9 percent, compared to the SVM's f-score of 89.8 percent.



Comparison between the Best Classifiers in Terms of Accuracy



Comparison between the Best Classifiers in Terms of F-Measure

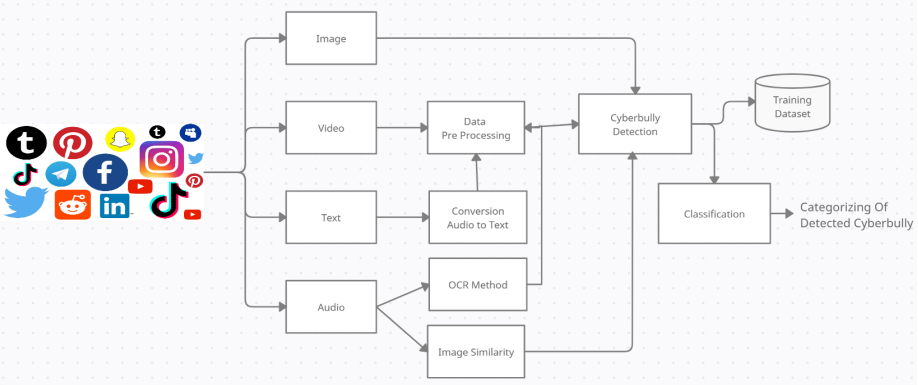
- According to the Li et at., research reviews the definitions of cyberbullying and emphasises a novel strategy for identifying it and controlling it using linguistic characteristics in the social scientific community. The goal of keyword lists focused on cyberbullying and sensitive cyberbullying terms is to automatically identify and stop cyberbullying. They are based on the recently created cyberbullying dataset in Chinese. There are certain restrictions, though. For instance, Sina Weibo regularly features cyberbullying-related concerns or articles. The situation could or might not be critical. Following and gathering all examples of cyberbullying is arduous, and categorising Chinese information is more difficult due to the intricate explanations. Additionally, the words level has to be given more careful thought.

- Sugandi et al. proposed a practical work for preventing cyber bullying usig SVM classfier and few data sets.The SVM classifier divides the data into bully and nonbully categories. According to the degree of the bullying, the data is eventually divided into three categories: high, medium, and low. All of the bullied individuals will also receive different types of online counselling by being directed to websites such as Alcoholics Anonymous-style online groups where bullied individuals can receive anonymous support, YouTube videos, depression chat rooms, etc.

Algorithm	Precision	Recall	F1 Score	Accuracy
SVM	0.91	0.91	0.9	91.31%
Naive Bayes	0.89	0.88	0.82	87.65%
KNN	0.89	0.89	0.86	88.87%

Comparison of Classifiers

3.5.4 Proposed Architecture



Proposed Architecture Diagram for Multimodel Cyberbully Detection

4 Future Directions

After assessing and evaluating the research paper found that the solutions roposed were just in preliminary stage. There is a lot of work to do in this domain.Overall, little is known about how cyberbullying starts, develops, and changes over time. A worrying idea that has emerged from social sciences research is that a bullied person can turn into a bully. However, there is little study on the bully-victim as a separate actor of cyberbullying. Looking at these difficulties, such as when and how one engages in bullying (for example, a person performing appropriately, then bullying after being tormented), computer science algorithms can assist in tracking back cyberbullying behaviour. A multi-cultural strategy should also be taken into account. The techinical solutions proposed were too intermediate. .As of now we do not have a particular parameter to assess the severity and relevance of Cyber bullying.In the near future,this method will eventually be expanded to provide cross-media detection for audio, video, and visual material as well. They also intend to use deep learning in the future to attempt to make their system context-aware

5 Conclusiom

In this paper, we basically explained three questions regarding to cyber bullying which were mentioned in page 11. We approached the nature of cyber bullying with the types of cyberbullying. Then we went on to analyze statistical data regarding cyberbullying in India and also around the world. Then, we analyzed related work in this domain and divided the papers into two types, the ones which provide actual solution and others which prove a theory. We complied the solutions proposed by various authors and derived few prevention techniques. Machine learning can alert and respond cyberbullying but cannot prevent it. Despite being active and having made significant progress, research on cyberbullying still confronts several significant obstacles. Definitional and measurement concerns, in particular, need to be completely handled. When an event should be classified as cyberbullying (with repeat) or cyberaggression (a one-time act); and the idea of power imbalance are two issues that need to be addressed more explicitly. There is an urgent need for a more uniform method of measuring in this field.

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