

**Cyber Bullying Detection using Machine Learning utilizing Social
Media Data**

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This Report Presented in Partial Fulfillment of the Requirements for the
Degree of Bachelor of Science in Computer Science and Engineering

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APPROVAL

This Research Based Project titled " Cyber Bullying Detection using Machine Learning utilizing Social Media Data", submitted by Md. Abdur-Rakib 172-15-9792, Rashedur Rahman 172-15-9610, Khadiza- Tul- Kobra 172-15-9707 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and engineering and approved as to its style and contents.

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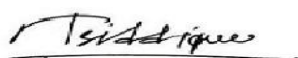
We hereby declare that, this project has been done by us under the supervision of **Mr. Ahmed Al Marouf, Lecturer, Department of CSE** Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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ABSTRACT

Harassment now a days become a headache for both men & women. Technological development makes our life easy, and harassment by using technological online platform become popular. This report centers to understand some aspect that related to the harassment by online which call cyberbullying. By the progressive of science of computer and application of machine learning, we attempt to find out a statistical possibility number of being cyberbullied by social media. By applying machine learning algorithms, we attempt to find out what is the main reasons of doing cyberbullying and which social media they get cyberbullied most. We gather around 1200 person's data with various aspect. The information is taken from students, job holders.

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CHAPTER 1

Introduction

1.1 Introduction

We are living in a world where online and social become part of our daily life. New people are connected by online day by day. Educated, Uneducated from all type of people are using online, and they are connection with each other by social media. By increase of using social media, crime also increase in social media. Disturb someone with inappropriate text, comment, or posting rumors using social media or online provocation is called cyberbullying or cyber harassment. Now a days cyberbullying its first concern to every person, particularly teens get cyberbullied mostly because they spend more time in social media after sleeping. Posting rumors, sexual comment or blackmailing it can cause of suicide of the victims, as this type of act cause of low self-esteem, lower confidence and lower self-trust. Online harassment can occur via online platforms like, Facebook, Twitter, Instagram, YouTube. As It can lead someone to death so it's because world problems, everyone trying to find the solution for this global Issue.

1.2 Motivation:

Some research show that percentage of cyberbullying are depend by country wise. As cyberbullying can cause of suicidal ideation, so we all need to focus on it effectively and find out possible way to reduce it. Public awareness is the key to stop this. Teach people how should we meet to use social media, be aware on posting anything in social media. By 2008, research shows that 93% of youngsters between the ages of 12 to 17 were on the web, indeed, youth invest more energy with media than any single other action other than resting.

Another cyberbullying is savaging which is these days very mainstream, web savages deliberately attempt to incite or affront others to inspire a response. Savages and cyberbullies don't generally have similar objectives. While a few savages take part in cyberbullying.

1.3 RATIONALE OF THE STUDY

Our motivation to develop a computer-based model to predict cyberbullying percentage. So based on we can take action to solve this issue to reduce social harassment. We can show people what is cause this online bullying, what that work on it. Bangladesh now moving fast to develop, online service is becoming expand now, all of the people are connected to the internet or trying to connect. Crime online is common. Teenagers are become the primary source to get bullied by social media, and cause of this many have lost their lives. An examination run by Australia surveyed cyberbullying encounters among 7418 understudies, the outcomes demonstrate that paces of cyberbullying expanded with ages, with 4.9% of understudies in year 4 reports cyberbullying contrast with 7.9% in year nine. An examination on cyberbullying in Hong Kong picked 48 out of 7654 understudies from primary school to secondary school who were delegated potential aggressors identified with cyberbullying. 31 out of 48 understudies pronounced they scarcely partook in digital assaults. In an investigation distributed in 2011, across 25 EU part states contemplated, a normal 6% of youngsters (9–16 years of age) had been tormented and just 3% of them admitted to having been a harasser.

1.4 RESEARCH QUESTIONS

There are too many kind of questions about what is the possible reason of doing cyberbullying. So we create a google form intent to collect real data form people and try to know all experience they faced in social media or get bullied. So we put some question and people gives their comments on this question and those question are also out main project question.

- Is education have any link to reduce cyberbullying or not?
- Why people do cyberbullying?
- From which platform people get cyberbullied most. (In Bangladesh).
- Is religion have any role on that?
- What kind cyber harassment you face Trolls, Threats or comment or posing rumors?

1.5 EXPECTED OUTPUT

We examine in excess of 1200 individuals' information, applying different kinds of Machine learning algorithms, Decision Tree Classifier, Naïve Bayes Classifier, Random Forest Classifier, Logistic Regression, Support Vector Machine, KNN, Impact learning(Robust), and Neural Network. Additionally, we discover the F-area, Confusion network.

As we early mention that we have try to find out a statistical view, find out the model accuracy by applying Algorithms. To see how people effected or get cyberbullied by social media. By this we will know which parameters give efficient results.

1.6 PROJECT MANAGEMENT AND FINANCE

To complete this research, we didn't need much money. We were bear all the expanses and we spent our valuable time on this research.

Table 1: Project Management

Activity	Timeline
Planning	1 Month
Knowledge Gathering	2 Months
Data Collection	3 Months
Data Preprocessing	10 Days
Implementation	1 Months
Report Generation	10 Days
Total	7 Months 20 Days

1.7 REPORT LAYOUT

This report contains six chapters. And all of those are explaining the following

Chapter 1: we put Introduction, Motivation, Objective, Expected Outcome, and Report Layout in chapter 1.

Chapter 2: Terminologies, Related Works, Comparative Analysis and Summary, Scope of the Problem and Challenges are in Chapter 2.

Chapter 3: In Chapter 3 we describe about Research Subject and Instrument, Data Collection Procedure, Proposed Methodology and Implementation Requirements.

Chapter 4: Chapter 4 contains Experimental Setup, Experimental Results and Analysis, Discussion.

Chapter 5: Impact on Society, Impact on Environment, Ethical Aspects, Sustainability Plan.

Chapter 6: Last Chapter contains Summary, Conclusion, Recommendation and Implication for Further Study.

CHAPTER 2

BACKGROUND

2.1 PRELIMINARIES/TERMINOLOGIES

ML:

ML stand for system learning. Machine Learning is the have a look at of pc algorithms that enhance spontaneously thru experience. It combined pc technology with statistics. Machine Learning is a subdivision of Artificial Intelligence and a subject of cutting-edge computing international that study from information, discover styles, and generate choices with minimum human intervention. It is the technique of information evaluation that automates analytical version constructing where skilled from the information to discover styles and capabilities in huge quantities of information to generate choices and predictions primarily based totally on new information. More information will deliver a more correct performance.

2.2 RELATED WORKS

López-Vizcaíno, Manuel F., et al. present to determine the strategies that recall the time withinside the region of cyberbullying in casual networks[1]. Besides Perera, Andrea, and Pumudu Fernando et al. portrays another framework for programmed discovery and counteraction of cyberbullying utilizing oppressive twist language or disdain discourse utilizing supervised machine learning. [2]. On the other hand, Sadiq, Saima, et al. proposed the test of programmed distinguishing proof of animosity location on tweets of the cyber-troll dataset[3]. After that Nugroho, Kristiawan, present to AdaBoost, and Neural Network techniques were utilized, which might be AI strategies in characterizing Cyberbullying phrases from one of a kind comments taken from Twitter[4]. Later on Ali, Aaminah, and Adeel M. Syed. propose an approach to detect cyberbullying along with the element of sarcasm included in it[5]. Besides Ates, Emre Cihan, Erkan Bostanci, and Mehmet Serdar Guzel. present to look at the exhibition of various Machine Learning algorithms in distinguishing Turkish messages containing cyberbullying[6]. And Faisal Ahmed, Md, et al. describe building up the capacity of machines to separate if a remark is a harasser articulation with the assistance of Natural Language Processing and how much it is ill-advised in the event that it is an unseemly remark[7]. After that Ranasinghe, Tharindu, and

Marcos Zampieri. proposed to MUDES, a multilingual system to detect offensive spans in texts[8]. On the other hand Bayari, Reem, and Ameer Bensefia. describe that have been led so far by the exploration local area in the subject of cyberbullying classification dependent on text language [9]. Besides Pericherla, Subbaraju, and E. Ilavarasan are presenting fundamental ways to deal with perceive cyberbullying over online media utilizing progressed AI and profound learning calculations [10]. After that Kumari, Kirti, and Jyoti Prakash Singh. proposed to separate consolidated highlights of text and pictures to recognize various instances of cyberbullying [11]. Also, Cheng, L., et al. describe the test of demonstrating worldly examples of cyberbullying conduct[12]. In addition, Koole, Marguerite, et al. describe exploring the phenomenon of cyberbullying using a sociomaterialist sensitivity[13]. Besides Thun, Lee Jia, Phoey Lee Teh, and Chi-Bin Cheng. proposes a system, which consolidates the best cyberbullying discovery highlights to fill the holes and regulations of present applications[14]. On the other hand Dadvar, Maral, and Kai Eckert. present to the discoveries of this writing and approved their discoveries utilizing the equivalent datasets, specifically Wikipedia, Twitter, and Formspring [15]. After that Yuvaraj, N., et al. proposed that consolidates both the component extraction motor and order motor from the info crude content datasets from a web-based media engine[16]. And Zhao, Rui, Anna Zhou, and Kezhi Mao. describe a portrayal learning structure explicit to cyberbullying identification[17]. Besides Balakrishnan, Vimala, Shahzaib Khan, and Hamid R. Arabia. proposed to manages programmed cyberbullying discovery instrument taking advantage of Twitter clients' mental highlights including characters, feeling, and feeling[18]. Also Raisi, Elaheh, and Bert Huang. presented to an AI strategy for all the while surmising client jobs in badgering based tormenting and new jargon markers of bullying[19]. On the other hand Akhter, Shahin. proposes the utilization of AI calculations and the incorporation of client data for cyberbullying recognition on Bangla text[20]

2.3 COMPARATIVE ANALYSIS AND SUMMARY

Table 2: Comparative Analysis and Summary

Author	Year	Methods	Accuracy
Aaminah Ali, Adeel M. Syed	2020	Cyberbullying Detection Using Machine Learning	Random Forest 91% Naïve Bayes 87% SVM 92% Logistic Regression 92% Ensemble 92%
Saima Sadiq, Arif Mehmood, Saleem Ullah, Maqsood Ahmed, Gyu Sang Choi, Byung-Won On	2021	we utilized worked on Deep Neural Network Architecture dependent on completely associated layers of Multilayer Perceptron. Our primary point is to take care of the thick layers with significant highlights denoised subsequent to preprocessing and highlight determination procedures	Accuracy 86% Precision 93% F1 Score 85% Recall 78%
Emre Cihan ATES, Erkan BOSTANCIb, Mehmet Serdar GÜZEL	2020	The point of this examination is to analyze the presentation of AI calculations that can be utilized in the location of Turkish substance cyberbullying messages from online media stages in the Twitter test.	Decision Tree Model 90.788% Logistic Regression Model 89.345% Random Forest 88.013% Bernoulli Naive Bayes 88.568%
Kristiawan Nugroho	2021	The exploration stage was completed by giving source information from the Indonesian language	Neural Network 99.8% AdaptiveBooster (AdaBoost) 99.5%

		Cyberbullying word dataset which was then done by the information preprocessing USING ADABOOST AND NEURAL NETWORK METHODS	
Andrea Perera, Pumudu Fernando	2021	By using TFIDF that can gauge the importance of phrases in a record and Common phrases, for example, "is", "am" dont influence the effects due to IDF.Profanity along Pronoun- Most of the cyberbullying content material found foulness.	TF-IDF 74.50% Sentiment analysis 69% Profanity 56% TF-IDF + Sentiment analysis 75.17%
Lee Jia Thun, Phoey Lee Teh, Chi-Bin Cheng	2021	We tested various styles of transportable programs that oversee cyberbullying. This investigation proposes an instrument, which consolidates the pleasant cyberbullying discovery highlights to fill the holes and constraints of present programs. The aftereffects of the exam have proven that the proposed transportable utility information a better precision in spotting cyberbully than other handy programs.	Random Forest 92% Decision Tree 89% Decision Tree/Regression 87% SVM with kernel = "rbf" 91% SVM with kernel = "sigmoid" 92% Gaussian Naïve Bayes 76% Naïve Bayes (Bernouli) 86% Complement Naïve Bayes 86%
Prashanth Vijayaraghavan	2021	Propose a profound neural multi-modular model that can:	LR 72% SVM 72%

<p>Hugo Larochelle Deb Roy</p>		<p>(a) identify disdain discourse by adequately catching the semantics of the content alongside socio-social setting in which a specific disdain articulation is made, and (b) give interpretable bits of knowledge into choices of our model. By playing out an intensive assessment of various displaying strategies, we exhibit that our model can beat the current cutting edge disdain discourse order draws near. At long last, we show the significance of social and social setting highlights towards uncovering groups related with various classifications of disdain</p>	<p>CNN-Char 72%</p>
<p>Farshid Faal^{1,2} , Jia Yuan Yu^{1,2} and Ketra Schmitt^{1,2}</p>	<p>2021</p>	<p>propose another methodology dependent on the area transformation language model and perform various tasks profound neural organization to distinguish and moderate this type of unintended model predisposition in online discussions. We utilize six poisonous language location and ID assignments to prepare the model to recognize harmful substance and relieve</p>	<p>BERT-fine-tuning 94.99% Adaptive-BERT-fine-tuning 95.05% Adaptive-BERT-fine-tuning 95.67%</p>

		<p>unintended predisposition in model forecast. We assess our model and contrast it and other best in class profound learning models utilizing explicit execution measurements to quantify the model predisposition. In nitty gritty examinations, we show our methodology can distinguish the poisonous language in discussions with impressively more power.</p>	
<p>Tharindu Ranasinghe, Marcos Zampieri</p>	<p>2021</p>	<p>The principle inspiration driving this philosophy is the new achievement that transformer models had in different NLP errands (Devlin et al., 2019) including offensivelanguage ID (Ranasinghe and Zampieri, 2020; Ranasinghe et al., 2019; Wiedemann et al., 2020). A large portion of these transformer-based methodologies take the last secret condition of the primary token ([CLS]) from the transformer as the portrayal of the entire grouping and a basic softmax classifier is added to the highest point of the transformer model to anticipate</p>	<p>en-large 68.86% en-base 67.34% multilingual-large 63.38% multilingual-base 61.60% spaCy baseline 59.76%</p>

		the likelihood of a class mark	
Rui Zhao, Anna Zhou, Kezhi Mao	2021	Propose a portrayal learning system explicit to cyberbullying identification. In light of word embeddings, we grow a rundown of pre-characterized offending words and relegate various loads to acquire harassing highlights, which are then connected with Bag-of-Words and inactive semantic highlights to shape the last portrayal prior to taking care of them into a direct SVM classifier. A test concentrate on a Twitter dataset is led, and our technique is contrasted and a few benchmark text portrayal learning models and cyberbullying recognition strategies. The predominant presentation accomplished by our technique has been seen in this examination.	<p>BoW Precision 75.6 Recall 77.8 F1 Score 76.6</p> <p>sBoW Precision 75.7 Recall 78.3 F1 Score 76.9</p> <p>LSA Precision 75.9 Recall 78.2 F1 Score 77.0</p> <p>LDA Precision 74.0 Recall 76.5 F1 Score 74.9</p> <p>EBoW Precision 76.8 Recall 79.4 F1 Score 78.0</p>

2.4 CHALLENGES

Our project goal is to predict cyberbullying. In our survey, we create a google form to collect data because for covit-19 all educational institutes have close their campus. As to conduct this kind of work first and important work is to collect data. Using online platform, it was hard to collect data, and also there were too many questions on this google form. We share this form to different education group but get less response then we send to individual by social media and request them to help us out.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Research Subject and Instrumentation

Cyberbullying is torturing that happens over digital units like cells, PCs, and tablets. Cyberbullying can arise via SMS, Text, and applications, or on-line in digital media, conversations, or gaming wherein humans can see, take part in or percentage content. Cyberbullying fuses sending, posting, or sharing antagonistic, pernicious, counterfeit, or mean substance approximately a person else. It can be a part of sharing person or private facts approximately a person else inflicting shame or humiliation. Some cyberbullying is going excessively a long way into illegal or crook direct.

Now a days Cyberbulling is the big problem in Social Media. So we have plan to implement a system that will help the people to be safe from cyberbulling from social media. Initially we will use social media data for prediction cyberbulling or not on specific social media. By the help of machine learning algorithm we find out that there have Cyberbulling or Not. Also, here we have utilized Google colab device. Google colaboratory is a free online cloud-primarily based totally Jupyter be aware pad weather that licenses us to installation our AI and profound getting to know fashions on CPUs, GPUs, and TPUs.

3.2 Data Collection Procedure/Dataset Utilized

There has just one kind of information assortment system for this paper. We have gathered information utilizing Google structure. We gathered information from 1158 members. Among the members 652 were male and 506 were female. The entirety of the members are Bangladeshi. Also, they are from CSE, Pharmacy, BBA, EEE, and Law division Students and some worker. All information from members is kept mysterious and they appropriately sign the assent structure for information protection and security concerns.

Table 3: Properties of the collected Dataset

Properties	Values
No. of Participants	1158
Total Instance	1158
No. of male instance	652
No. of female instance	506

3.3 Proposed Methodology/Applied Mechanism

In this project, we have utilized nine kinds of AI calculations. By execution those calculations, we have prepared and tried our dataset. What's more, we accomplished diverse precision for various algorithms. The following algorithms we have implemented were:

- Decision Tree
- KNN
- Naïve Bayes
- SVM
- Random Forest
- Logistic Regression
- XGBoost
- Impact Learning (Robust)
- Neural Network

Decision Tree[1]: Decision Tree is our first applied algorithm. A Decision Tree is one of the predictive gear which can be used for decision-making in facts mining classifications. Decision tree classifiers are used efficiently in lots of instances inclusive of individual recognition, radar sign classification, remedy diagnosis, far

flung sensing, speech recognition, and professional systems. It is one of the maximum famous gadget getting to know algorithms for given intelligibility and simplicity. Decision Tree has verified advanced for classifying numerical and specific facts while the expected final results is the class.

KNN[2]: It is our second execution algorithm. We take K-Nearest Classifier as our second execution calculation, it's the clearest machine learning calculation, under supervised Learning System. This calculation process of KNN to resemblance between new case or new data and open case, then places new cases into in order that its most line open order. This particular Machine Learning calculation stores all available data, and masterminds another data points based on similarity. This derive when new case appears then it will in general, easily gathered into an appropriate class by using KNN calculation.

Naïve Bayes[3]: Naïve Bayes classifiers refers to “probabilistic classifiers”. Its gathering fundamental probabilistic classifiers applying Bayes hypothesis with strong independence impersonation between features. In our project we have apply Naïve Bayes as our third execution calculation.

SVM[4]: This is our fourth execution calculation. Support Vector Machine is one of the best celebrated calculation under supervised learning module. And we have taken this as our fourth executive calculation. This is use for classification notwithstanding Regression Issues. So that as it may, usually far utilized for Classification Issues in Machine Learning.

Random Forest[5]: We have selected Random Forest as our fifth execution Algorithm. It's a notable Artificial Intelligence calculation that has a spot with the directed learning technique. It usually uses for both Classification and Regression issues in Machine Learning. This classifier that contains several decision trees on

various subsets of the given dataset, and takes typical to improve the insightful precision of that dataset.

Logistic Regression[6]: It's the most standard machine learning by its strategic relapse and this belong to Supervised Learning technique. The outcome of this particular algorithm is limited in two ways like, either Yes or No, 0 or 1, true or false. Its gives probabilistic characteristics in boundary which score of 0 and 1. Logistics Regression is more likely linear regression, beside how it's has been used. Immediate regression is used for managing Regression issues, and logistic backslide is used for dealing with portrayal issues. For our this work we have taken this, as our six executive calculations.

XGBoost[7]: XGBoost is our seven execution calculation. XGBoost is a calculation that has actually been overpowering applied AI and Kaggle competitions for organized or plain information. XGBoost is a versatile and exact execution of point boosting machines and it has shown to extend the limits of figuring power for upheld trees estimations as it was manufactured and made for the sole inspiration driving model execution and computational speed.

Impact Learning (Robust)[8]: Impact learning is our eight implementation algorithm. It is a supervised machine learning algorithm for settling arrangements and straight or polynomial relapse information from models. It likewise adds to breaking down frameworks for serious information. This algorithm is novel for being equipped for gaining from an opposition, which is the effect of autonomous highlights. At the end of the day, it is prepared by the effects of the highlights from the inherent pace of common increment. The contribution to Impact Learning is a preparation set of mathematical information.

Neural Network[9]: Neural networks are a hard and fast of algorithms, modeled loosely after the human brain, which are designed to understand styles. They interpret sensory information thru a form of device perception, labeling or clustering uncooked input. The styles they understand are numerical, contained in

vectors, into which all real-international information, be it images, sound, textual content or time series, need to be translated.

3.4 Implementation Requirement

- Windows Operating System
- Google Colaboratory for knowledge Analysis.

CHAPTER 4

EXPERIMENTAL RESULTS AND DISCUSSION

4.1 EXPERIMENTAL SETUP

The main purpose of our study is to make prediction about cyberbullying that is it cyberbullying or not. At the data collection stage, we have collected data through online Google forms. We have collected 1158 data using Google forms where were 16 attributes. For utilizing this information in AI, we have assembled this crude information and convert them into a dataset.

For execution, we have utilized CSV record design in Google colab. What's more, it is a free online cloud-primarily based totally Jupyter be aware pad weather that licenses us to installation our AI and profound getting to know fashions on CPUs, GPUs, and TPUs.. Utilizing Google colab apparatus from the start we convert our dataset unmitigated to numeric lastly we have chosen 6 in number ascribes with the goal that we get decent outcomes. After that we have run diverse sort of AI calculations with this dataset.

4.2 EXPERIMENTAL RESULTS AND ANALYSIS

In this projects, We have utilized machine learning procedures, which are Decision Tree, KNN, Naïve Bayes, Random Forest, Impact-Learning, SVM, XGBoost, Logistic Regression, and Neural Network strategies. We have used Google Colab which is a free online cloud-primarily based totally Jupyter be aware pad weather that licenses us to installation our AI and profound getting to know fashions on CPUs, GPUs, and TPUs. We have executed our dataset in Google colab tool to discover our outcomes and analysis. After using those algorithms we got the same accuracy with these algorithms(Neural Network, SVM, Naïve Bayes, Logistic Regression, and Impact Learning) so we take just Neural Network from these Algorithms.

Table 4: Performance Evaluation Metrics for each ML classifier

Algorithm name	Precision	Recall	F-measure	Accuracy
Decision Tree	0.68	0.66	0.67	66.2069%
Random Forest(RF)	0.71	0.75	0.72	75.1724%
KNN	0.67	0.78	0.71	78.2759%
XGBoost	0.71	0.80	0.72	79.6551%
Neural Network	0.65	0.80	0.72	80.3448%

*Bold number represent the highest values

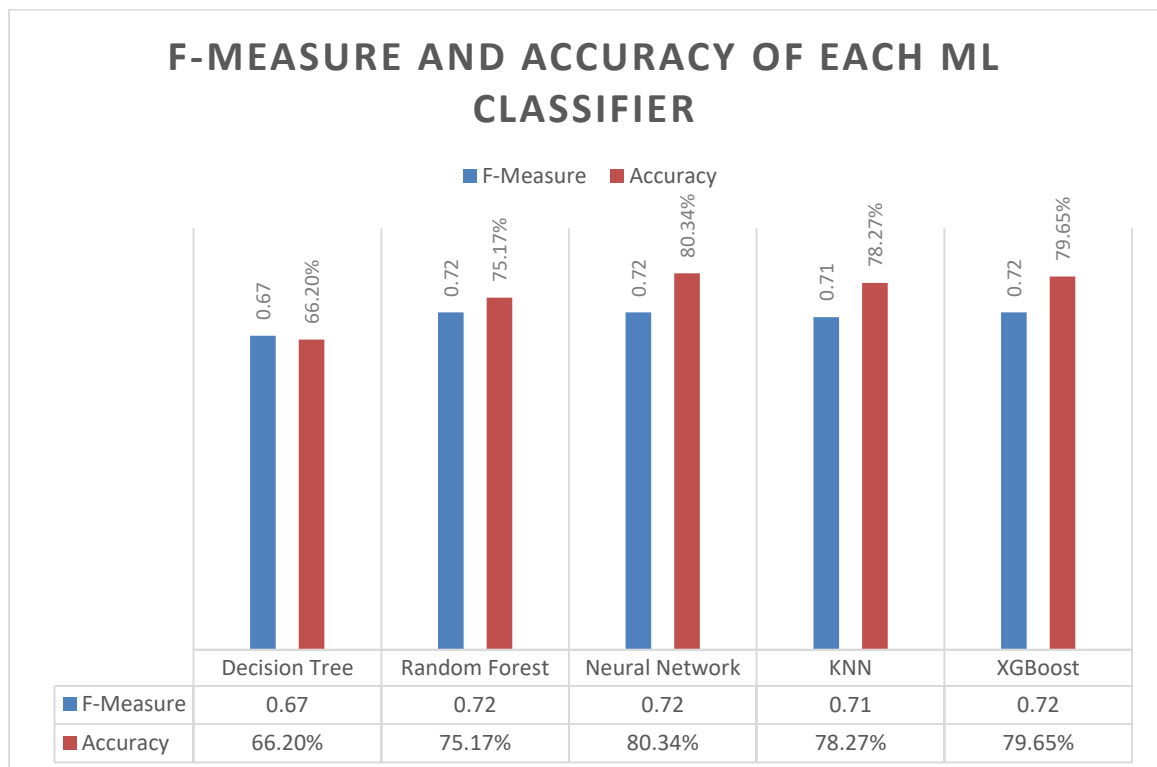


Figure 1: Column chart showing the f-measure and accuracy of the ML classifiers.

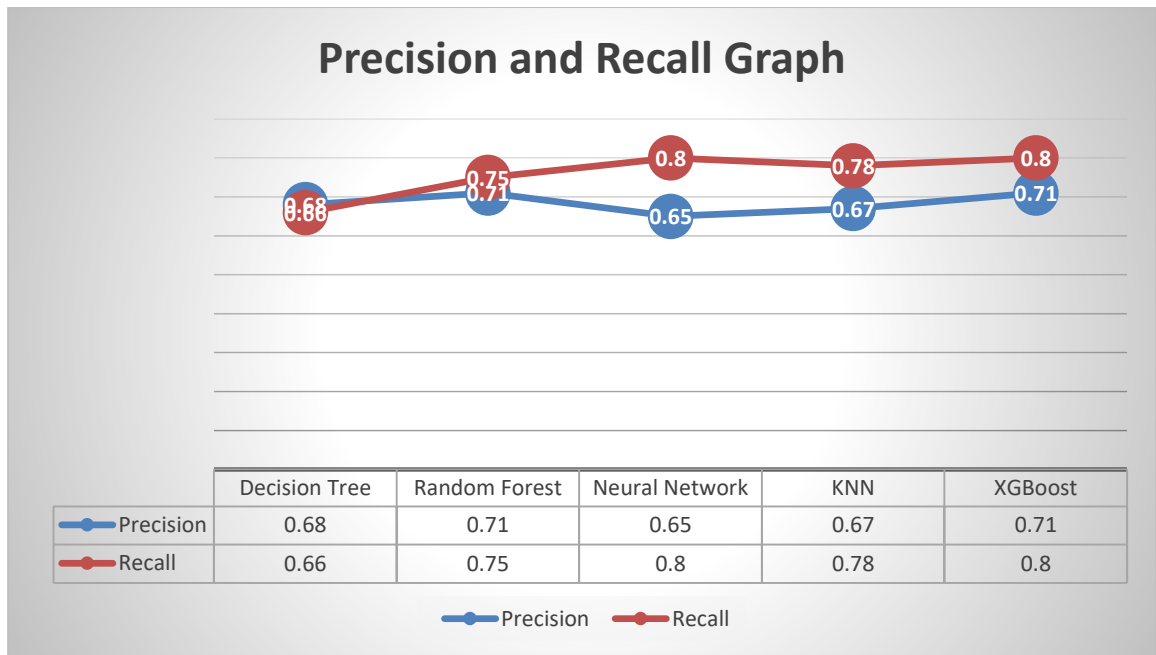


Figure 2: Precision-Recall Graph of Different Classifiers

4.3 DISCUSSION

We have used machine learning techniques, the ones are Decision Tree, KNN, Naïve Bayes, Random Forest, Impact-Learning, SVM, Naive Bayes, Logistic Regression, XGBoost, and Neural Network. After finishing the analysis, we have visible that SVM, Naïve Bayes, Logistic Regression, and Neural Network have the very best accuracy of 80.34%. So from the ones maximum accuracies, we've got taken simply Neural Network techniques. So finally our maximum accuracy is 80.34%.

CHAPTER 5

IMPACT ON SOCIETY, ENVIRONMENT AND SUSTAINABILITY

5.1 IMPACT ON SOCIETY

Cyberbullying is the most common problem in our society now a days. So detecting cyberbullying is very much needed. This research will have very positive impact on our society. Using this research we can provide necessary advise and legal assistance to the victims. It will help to detect the unusual and abusive behavior on social media. It will help to have a safer cyber world. From this research paper we can see that most of the time women are the victims. We can see many unwanted news like suicide and many more because of cyberbullying. This research will help to detect cyberbullying and take necessary steps to stop it. Then we may have less suicide or unwanted news.

5.2 IMPACT ON ECONOMY

Technology is considered as most important for a progressive and strong economy of a country. There will be a positive impact on economy when people will use our project to detect cyberbullying. Someone will be needed to work and handle the whole system to detect cyberbullying. So employment opportunities will be created. The unemployment rate will decrease.

5.3 ETHICAL ASPECTS

Every good deed has an ethical aspect. We can call it morality. We can obtain the result of the work when the moral aspects are fulfilled. The moral aspects of our project is to make the cyber world safer. This will help people to feel safe while using social media. It will help the people not to take negative step for being bullied on cyber world.

5.4 SUSTAINABILITY

Our project doesn't have any negative impact on environment. It is not bad for atmosphere. It doesn't produce any garbage. This is not very expensive to use. Anyone who has internet connection can install it and use it.

CHAPTER 6

SUMMARY, CONCLUSION, RECOMMENDATION AND IMPLICATION FOR FUTURE RESEARCH

6.1 SUMMERY

Cyberbullying detection is an unique idea. The primary significance of this project is to develop and improve the cyber security system. It furnishes development with police, crime brunch and upgrades the development of the social government assistance. This is why cyberbullying detection is so significant to the public and our country.

We have used Naive Bayes, Logistic regression, XGboost and Neural Network and we have maximum accuracy of 80.34%. So from the ones maximum accuracies, we've got taken simply Neural Network techniques. So finally our maximum accuracy is 80.34%.

6.2 CONCLUSION

To recognize cyberbullying utilizing AI strategies has been proposed in this project. Here, we have contrasted our work and another connected work that utilized the equivalent dataset and found that our Neural Network out played out their classifiers as far as precision and f-score. We accept that by accomplishing this precision, our work is definitely going to improve digital tormenting recognition to assist individuals with utilizing online media securely. In any case, distinguishing cyberbullying design is restricted by the size of preparing information. In this manner, a bigger cyberbullying information is expected to improve the exhibition. Henceforth, profound learning procedures will be appropriate in the bigger information as they are demonstrated to beat AI approaches over bigger size information.

6.3 IMPLICATION FOR FUTURE RESEARCH

We want to improve my research in future. In this research more than 1000 people participated with me by giving data. In future we will collect data from more people. We will use other machine learning techniques to get better performance and accuracy.

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