

Chapter 5

Framework for Detection of Cyberbullying in Text Data Using Natural Language Processing and Machine Learning

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ABSTRACT

Cyberbullying is a huge problem online that affects young people and adults. It can lead to accidents like suicide and depression. There is a growing need to curate content on social media platforms. In the following study, the authors used data on two different forms of cyberbullying, hate speech tweets on Twitter, and ad hominem-based comments on Wikipedia forums. The authors use machine learning-based natural language processing and textual data to build models based on cyberbullying detection. They study three feature extraction methods and their four classifiers to determine the best method. The model achieves an accuracy of more than 90 degrees on the tweet data and more than 80 degrees on the Wikipedia data.

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1. INTRODUCTION

Cyberbullying is a type of bullying or harassment that occurs through digital platforms, particularly social media. Cyberbullying manifests in different forms such as sharing or spreading derogatory and hurtful messages, images or videos, spreading rumors, making threats and so on. Social media has given rise to cyberbullying as it provides anonymity to cyberbullies, enabling them to reach a larger audience with their harmful messages.

Identifying cyberbullying on social media is essential to prevent and address the negative impact it can have on victims. While traditional bullying often takes place in person and can be observed by others, cyberbullying takes place in a virtual world and can be more difficult to detect. However, there are some methods you can use to identify and deal with cyberbullying on social media.

One method for identifying cyberbullying via virtual entertainment is through computerized apparatuses that dissect client produced content like posts, remarks, and messages. Patterns of malicious behavior, such as harassing or threatening messages, can be identified using these tools, which make use of machine learning and natural language processing algorithms. Such apparatuses can hail dangerous substance for additional consideration by human mediators or policemen.

Another way is to encourage viewers to report cyberbullying when they see it. Social media platforms may offer reporting features that allow users to report harmful content or behavior for review. Reporting mechanisms are essential tools for detecting cyberbullying that otherwise goes unnoticed. Some platforms also have features that allow users to block or mute other users. This is useful for cyberbullying victims who want to avoid exposure to even more harmful content.

Additionally, educators and parents can play a role in detecting cyberbullying by monitoring children's social media activities and looking for signs of bullying, such as: B. Changes in behavior or mood, withdrawal from social activities, or unwillingness to go to school. It is important for parents and educators to speak openly to children about cyberbullying and to provide resources and support when they are being bullied.

In summary, awareness of cyberbullying on social media is an essential part of preventing and combating the negative effects of cyberbullying. Through the use of automated tools, reporting mechanisms, and personal oversight, we can work together to create a safer and more positive online environment for all of our users.

2. LITERATURE REVIEW

2.1. Define the Problem

Addresses several key issues related to cyberbullying, including its definition, prevalence, and harmful effects on individuals' mental health and well-being. Cyberbullying is a form of online harassment that involves various behaviors such as spreading rumors, threats, and harassment. As technology and social media use have become more prevalent, cyberbullying has become a pervasive problem with serious consequences, including anxiety, depression, and even suicide. One approach to predicting cyberbullying in social media involves using machine learning techniques to identify posts, messages, or comments that contain content that could be considered cyberbullying. The overall accuracy and robustness of the model can be enhanced by employing an ensemble learning strategy, which entails training multiple

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