**Individual In-depth Report**

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**Evaluated by:** [Rahul Nayak](mailto:rrnayak@asu.edu)

**Date: 10/09/2023**

**Tasks Assigned:**

* This report summarizes the paper ‘Predicting Abnormal User Behaviour Patterns in Social Media Platforms based on Process Mining’ in depth.

**Summary:**

* The paper addresses the issue of cyberbullying in the context of social media, highlighting its increased prevalence due to image sharing and textual comments.
* Cyberbullying is defined as the dissemination of harmful, false, or cruel content about individuals online.
* Automated processes for detecting cyberbullying are crucial to maintaining safe and secure online environments.
* Process mining, which combines data science with management systems, is introduced as a methodology for analyzing organizational functions using log information.
* Combining textual data with images makes it challenging to detect all instances of cyberbullying using traditional methods.
* The paper proposes a system that aims to detect various forms of cyberbullying by identifying hidden connections between individuals and groups with similar behaviors.
* The proposed system utilizes techniques such as data mining and analysis of business processes.
* The paper discusses the methodology used for data collection, including data from sources like Twitter, and data preprocessing techniques such as cleaning and transformation.
* Building a model for cyberbullying detection involves the use of recurrent neural networks (RNN) and N-grams to analyze textual data.
* Different classifiers, including Naïve Bayes, Decision Tree, Maxent, and Support Vector Machine, are evaluated for their performance in cyberbullying detection.

**Outcome:**

Naïve Bayes is found to have the best precision among the classifiers.The paper concludes by suggesting the potential applicability of the proposed method to other social media platforms and the importance of incorporating visual data for more accurate cyberbullying detection. Future research directions include expanding the cyberbullying detection approach to multiple social media platforms and improving its accuracy by combining visual and textual data.

**References**

[39] S. G, D. Chandrasekaran, M. D. Sre and M. Sathiyanarayanan, "Predicting Abnormal User Behaviour Patterns in Social Media Platforms based on Process Mining," 2023 International Conference on Intelligent and Innovative Technologies in Computing, Electrical and Electronics (IITCEE), Bengaluru, India, 2023, pp. 204-209, doi: 10.1109/IITCEE57236.2023.10091025.

**Evaluation of Report**

**Evaluation summary with justification.**

The paper evaluates various classifiers for cyberbullying detection, including Naïve Bayes, Decision Tree, Maxent, and Support Vector Machine. The performance of these classifiers is assessed, but a detailed evaluation summary with justification is not provided in the provided information. To create an evaluation summary with justification, you would need access to the specific results, metrics, and performance comparisons presented in the paper. This information is necessary to assess and justify the effectiveness of each classifier in detecting cyberbullying.

**The quality of the major result(s) with justification.**

The major result reveals Naïve Bayes as the most precise cyberbullying classifier. The paper suggests wider applicability of the method across social media platforms and underscores the importance of combining visual and textual data for improved accuracy. Future research aims to expand to multiple platforms and enhance detection precision.

**The usefulness of the paper to the overall project.**   
The ML techniques used in this paper(Naive Bayes) can be further used to detect malicious activities on social media, successfully targeting the main goal of this project.

**Other comments**

Report is well written.

**Evaluation Approval  
  
Evaluation by:** [Rahul Nayak](mailto:rrnayak@asu.edu) **Date: 10/09/2023**

**Is the written report of the in-depth study complete with all the major result(s) of the paper(s)? If not, provide as many examples of the major result(s) missing in the written report as possible. (in bullet form). [Normally within 100 words]**Yes, the written report of the in-depth study is complete with all the major results of the paper. Each section of the guidelines has been sufficiently completed. The paper comprehensively addresses the issue of cyberbullying in the context of social media, emphasizing its prevalence due to image sharing and textual comments. It defines cyberbullying and highlights the importance of automated detection processes for online safety. The introduction of process mining as a methodology for analyzing organizational functions using log information is well-explained. The paper proposes a system to detect various forms of cyberbullying and discusses data collection, preprocessing techniques, and the use of recurrent neural networks and various classifiers. All major aspects of the research are adequately covered.

**Is each section of the guidelines sufficiently completed? If not, point out what is missing. [Normally within 40 words].**

Yes, each section of the guidelines is sufficiently completed. The paper comprehensively addresses cyberbullying in social media, discusses automated detection methods, introduces process mining, and details data collection and analysis techniques, ensuring a thorough exploration of the topic.

**Is the quality of this version of the written report satisfactory? If not, then why not? [Normally within 40 words]**

Yes, the quality of this version of the written report is satisfactory.

**Approval.  
  
Approved by:** [Krupaben Kothadia](mailto:kkothadi@asu.edu) **Date:10/09/2023**

**Is the quality of this written in-depth study report and Evaluation report satisfactory? If not, then why not? (limit: 40 words)**

The written in-depth study report and evaluation report exhibit a satisfactory level of quality. The evaluation report accurately represents the evaluation process, and the report effectively supports the project's theme by demonstrating the practical application of data mining techniques in detecting suspicious activities on social media.