**Individual Report**

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**Evaluated by:** [Sangeeth Santhosh](mailto:ssantho9@asu.edu)

**Date:** 09/16/23

**Tasks Assigned:**

* Literature review for Machine learning techniques applied in: “Weakly Supervised Extraction of Computer Security Events from Twitter”
* Write In-depth Report while comparing it to methods seen before.
* Review and Evaluate 1 other person's report.
* Prepare Gantt Chart.

**Summary:**

* Paper compared algorithms including One-Class SVMs and Expectation Regularization; Expectation Regularization demonstrated better precision and recall.
* Collection of tweets mentioning each seed event.
* Seed instances (historical event examples) used for training to detect similar real-time Twitter events.
* Extracting candidate events involved providing historical seed examples, collecting relevant tweets, tracking keywords, and extracting named entities and tweet dates.
* Results showed the weakly supervised approach outperformed previous methods in precision and recall for security-related events.
* Techniques like label regularization addressed challenges in learning from limited positive seeds and unlabeled events.
* A bag of tweets mentioning each seed event is collected.
* Seed instances played a crucial role in the training process.
* The Expectation Regularization approach showed promise in machine learning-based security content classification.

**Outcome:**

The proposed weakly supervised approach outperforms previous methods, including heuristic negatives, semi-supervised EM, and one-class SVMs. Significant improvements in precision and recall are seen for security-related events like DoS attacks, data breaches, and account hijacking. The weakly supervised seed-based approach allows rapid training of event extractors with minimal supervision.

**References** *(with citation)*

[1] A. Ritter, E. Wright, W. Casey, and T. Mitchell, “Weakly supervised extraction of computer security events from twitter,” Florence, Italy: International World Wide Web Conferences Steering Committee, 2015, pp. 896–905. doi: https://doi.org/10.1145/2736277.2741083.

**Evaluation of Report  
  
Evaluation by:** [Sangeeth Santhosh](mailto:ssantho9@asu.edu) **Date:** 09/17/23

**Is the weekly member report 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). [within 100 words]**

Yes, the weekly report is complete with the major result of the paper, Weakly Supervised Extraction of Computer Security events from Twitter, covered in detail.

**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 has been explained in detail and is satisfactory.

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

Yes, the quality of the written report is satisfactory.

**Approved by:**[Krupaben Kothadia](mailto:kkothadi@asu.edu) **Date: 09/18/2023**