**Individual In-depth Report**

**Member name: Justin Young**

**Evaluated by:** Yeshwanth Reddy Chennur

**Date:** Sep 18, 2023

**Tasks Assigned:**

* Literature review of Cooperative Machine Learning Techniques for Cloud Intrusion Detection.

**Summary:**

* This paper proposes a new network intrusion detection model called Secure Packet Classifier (SPC) to detect and classify cloud anomalies using collaborative filtering between two machine learning algorithms.
* The introduction covers the importance of cloud computing, why machine learning is most effective in ensuring security, and proposes a new model.
* The structure of the anomaly detection framework consists of three steps:
  + Step 1 - Off-line data processing (partitioning the data)
  + Step 2 - Model training (creating the model)
  + Step 3 - Model testing (verify performance of the SPC algorithm)
* The UNSW dataset is used to train, validate and test the SPC model
* This paper also conducts a performance analysis between the SPC, Complex Tree and Ensemble models
  + The decision criteria of this analysis is a combination of accuracy and detection probability for a good detection rate.
* This paper concludes that the SPC model they propose tested with 81% accuracy, which is a 20% improvement over traditional methods.

**Outcome:**

This paper provides us with a new ML model, the SPC model, which can be used for ensuring security in cloud computing systems. The SPC model has also been tested to perform 20% above traditional methods.

**References** *(with citation)*

[28] Z. Chkirbene, R. Camila, A. Erbad, S. Kiranyaz, N. Al-Emadi and M. Hamdi, “Cooperative Machine Learning Techniques for Cloud Intrusion Detection”, In 2021 International Wireless Communications and Mobile Computing, Harbin City, China pp. 837-842

**Evaluation of Report**

**Evaluation summary with justification.**

* The Secure Packet Classifier (SPC) will be introduced for cloud system security. It makes use of two programs to detect and classify odd network behavior. This study shows the importance of cloud computing and highlights SPC's 81% accuracy, which is a significant improvement over traditional approaches.

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

* The study highlights SPC's 81% accuracy, a major improvement over the conventional methods, in detecting anomalies in cloud environments.

**The usefulness of the paper to the overall project.**

* Implementing the SPC model with 81% accuracy enhances the project security, aligning closely with its goals for a focused result.

**Other comments**

**Evaluation Approval  
  
Evaluation by:** Yeshwanth Reddy Chennur **Date: Sep 18, 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 in-depth study completed with all the major results.

**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.

**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 report is satisfactory.

**Approval.  
  
Approved by:** [Krupaben Kothadia](mailto:kkothadi@asu.edu) **Date: 09/18/2023  
  
Is the quality of this written in-depth study report and Evaluation report satisfactory? If not, then why not? (limit: 40 words)**

Yes, the quality of the in-depth study report is satisfactory, as the approach is discussed clearly. Also, the evaluation report is satisfactory as the quality of content mentioned, denotes that the study report has been thoroughly understood by the evaluator.