July 28, 2025

Dear Dr. Iera

We are pleased to submit our manuscript entitled "Real-Time Network Security: Integrating ANN and Graph-Based Clustering" for your consideration for publication in *Computer Networks*.

Co-authors: Matan Weiss, Dr. Revital Marbel, Dr. Chen Hajaj, Prof. Amit Dvir, and Dr. Ran Dubin

As the volume and complexity of modern network traffic continue to grow, robust and efficient intrusion detection systems are of critical importance. This work presents a real-time anomaly detection framework based on zero-shot anomaly detection, graph neural networks (GNNs), dynamic clustering, and approximate nearest neighbor (ANN) techniques. It introduces two novel algorithms, D-MAGIC and SAGA,that detect both isolated and coordinated threats by analyzing network traffic packet-by-packet. Unlike traditional systems that rely on labeled data or static features, our approach constructs dynamic tripartite graphs to model network behavior and employs a dual-layer detection mechanism to ensure robust performance across various threat types.

We evaluated our system on benchmark datasets (CIC-IDS-2017 and CSE-CIC-IDS-2018), demonstrating clear improvements over recent state-of-the-art methods. These results underscore the practicality and effectiveness of our framework in dynamic, high-volume environments.

The manuscript was originally submitted to a *special issue of Computers & Security (*Advances in Robust Intrusion Detection through Machine Learning), where one reviewer recommended acceptance. We have since revised the paper based on the constructive feedback provided by another reviewer. The current version incorporates all suggested improvements, and we believe it is now significantly clearer, stronger, and more complete than the original submission.

As part of this submission, we are providing the following files:

- *manuscript.pdf*: a clean version of the revised manuscript reflecting changes based on the reviewer's comments.
- *manuscript_with_highlighted_changes.pdf*: the same revised manuscript with changes highlighted in blue.
- *Detailed Response to Reviewers.pdf*: a point-by-point response to the reviewer's comments.

We believe our manuscript aligns with the scope of *Computer Networks*, particularly in advancing AI-based techniques for real-time and intelligent network security. We appreciate your time and consideration, and we look forward to your feedback.

Sincerely,
Zohar Simhon
Ariel University, Israel
zohar.simhon@msmail.ariel.ac.il