

Postgraduate Seminar Series

Venue: Graduate Seminar Room

Date & Time: August 29, 2026 at 3:30 PM

Speaker Information

Md. Abid Jahan (Std No. 0422052021) is a part time M.Sc. student in the department of CSE, BUET. He completed his undergraduate studies from Bangladesh University of Engineering and Technology (BUET) in 2022. His research interest lies in the field(s) of Cybersecurity, Machine Learning, and Deep Learning. He is a full-time faculty member in the department of CSE at BRAC University. He is currently doing his postgraduate thesis under the supervision of Dr. A.K.M. Ashikur Rahman. He will be speaking about his ongoing research in this talk.



Effective Feature Selection Strategy for Machine Learning–Based IoT Botnet Attack Detection and Classification

Botnet attacks have emerged as one of the most critical security threats in rapidly expanding Internet of Things (IoT) environments, as limited computational resources, encrypted traffic, and diverse communication patterns make it more difficult to detect such attacks. Although machine learning–based approaches have shown promise, they strongly depend on the choice of relevant features, whereas high-dimensional feature sets often introduce redundancy and computational overhead. In this study, we investigate the effect of using flow-based features for detecting IoT botnets and develop an effective strategy to select compact and effective feature subsets. In particular, two feature interaction-aware heuristics— Sequential Inclusion Method and Exhaustive Inclusion Method—are presented to explore the feature space. The proposed methods are tested with two classification frameworks (binary and multiclass) using the CICIoT2023 dataset, which includes a large number of devices and diverse attack types. Experimental results show that the proposed approach achieves up to 88.53% accuracy and 88.27% detection rate in binary classification. Meanwhile, it performs comparably well in multiclass scenarios with more than fifty percent zero-day attacks. Overall, the results show that the feature selection strategy in IoT environments can provide effective results despite resource constraints in practical scenarios.