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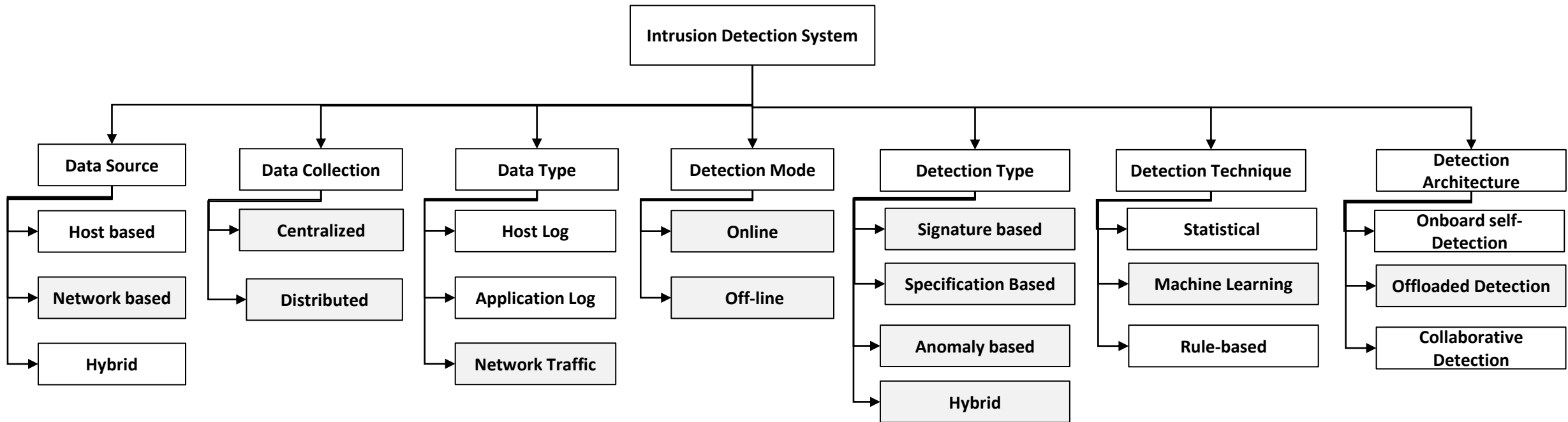


Summer School in Blansko

Machine Learning Techniques for Network Intrusion Detection Systems

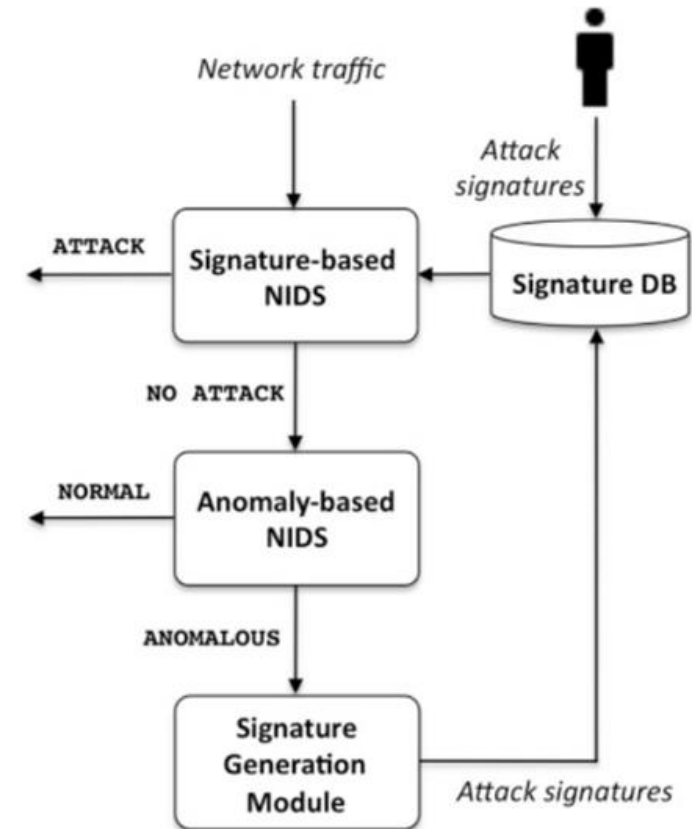
BARBORA BÜHNOVÁ
HIND BANGUI

Machine Learning Techniques for Network Intrusion Detection Systems

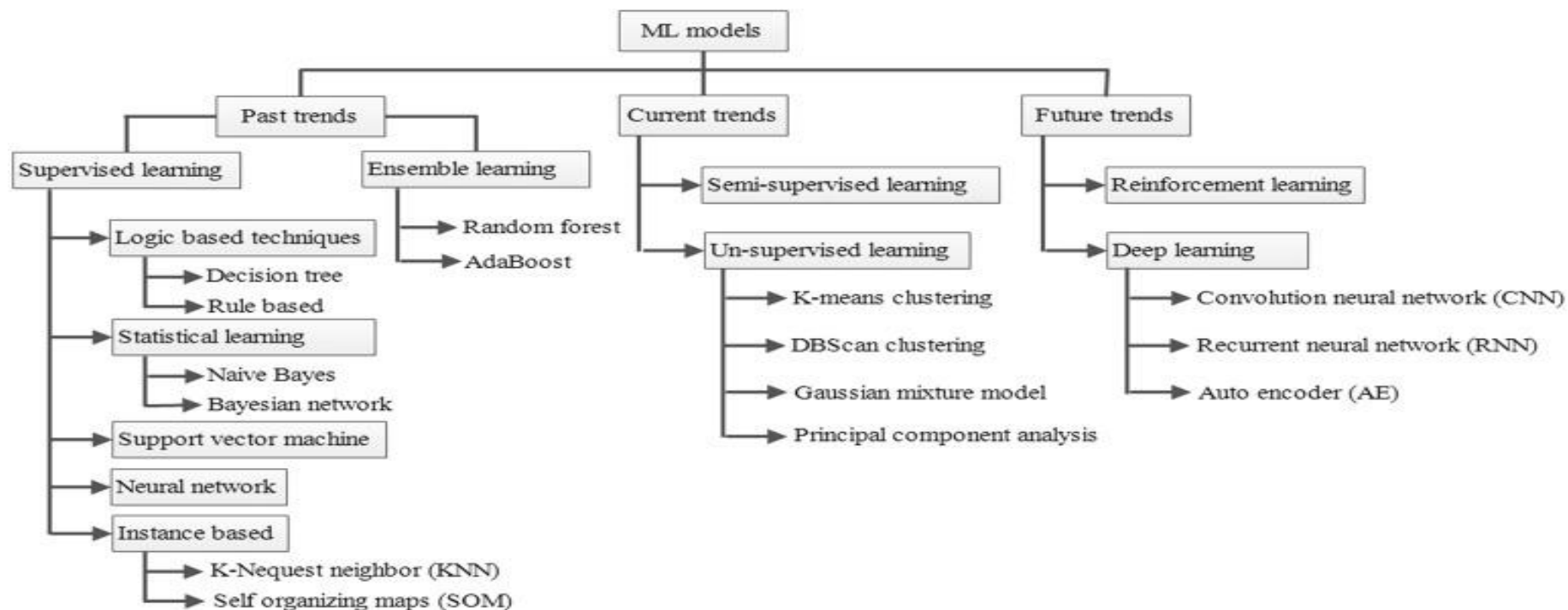


Machine Learning Techniques for Network Intrusion Detection Systems

- Different attacks require different defense mechanisms in practical systems.
- Currently available NIDS cannot detect attacks accurately
 - Not deal with large amounts of data.
 - Poor classification results.
 - New attacks are emerging almost constantly and using outdated traffic data does not reflect the actual performance of NIDS when applied to modern networks.

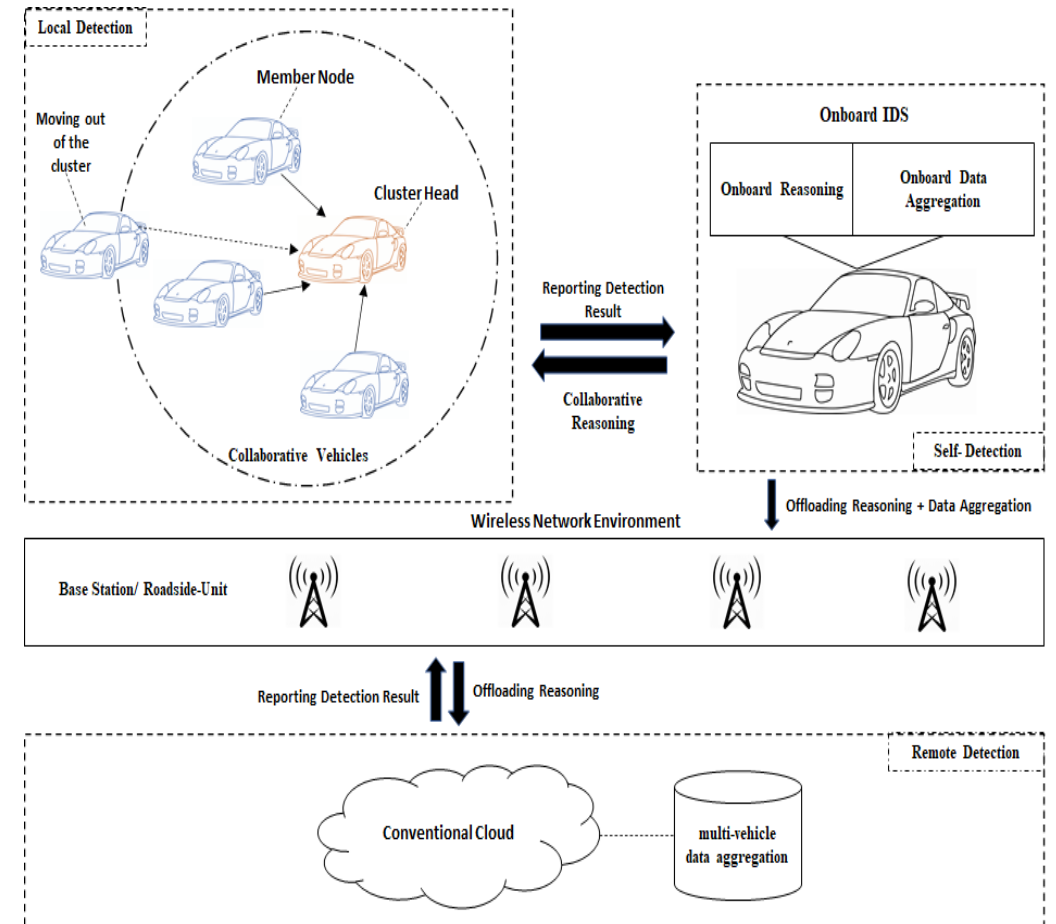
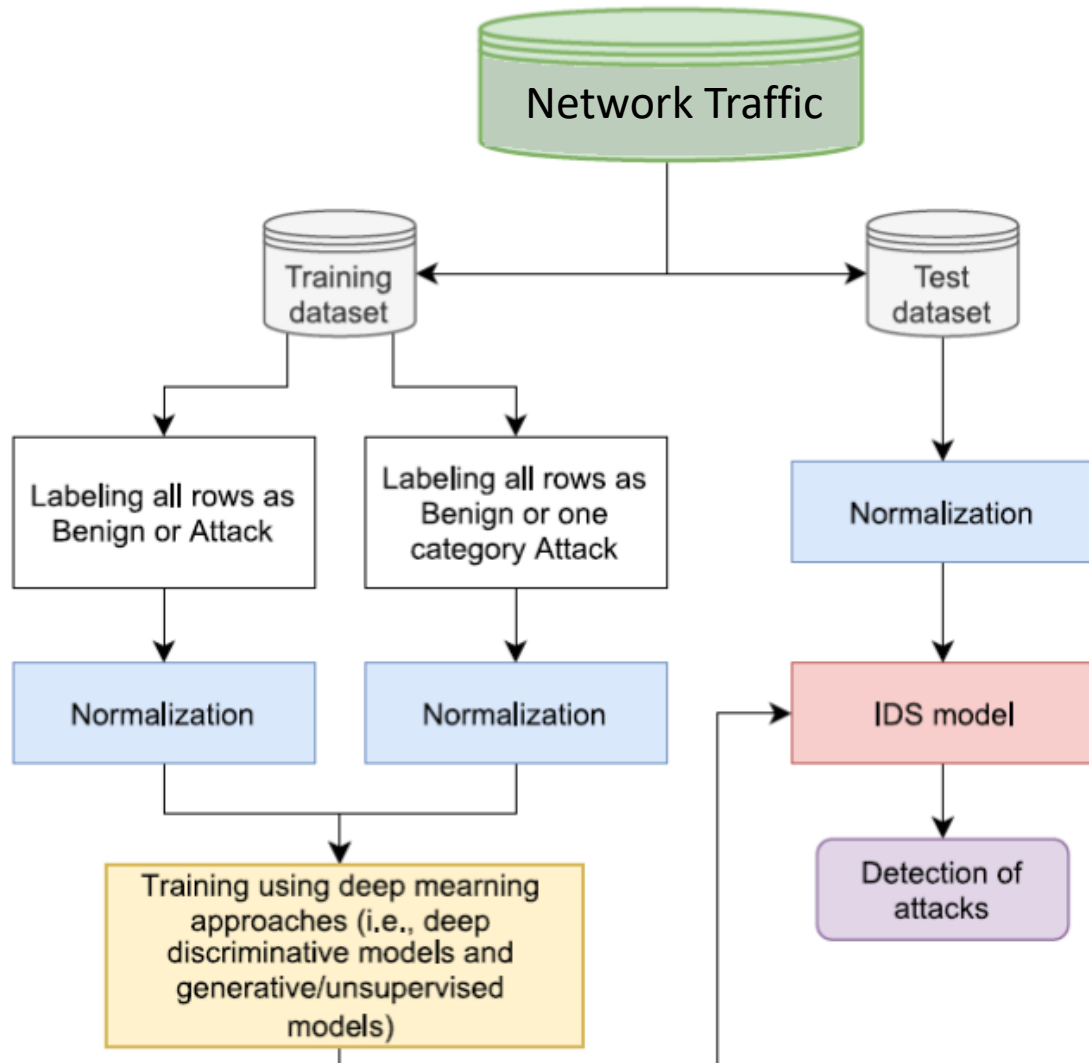


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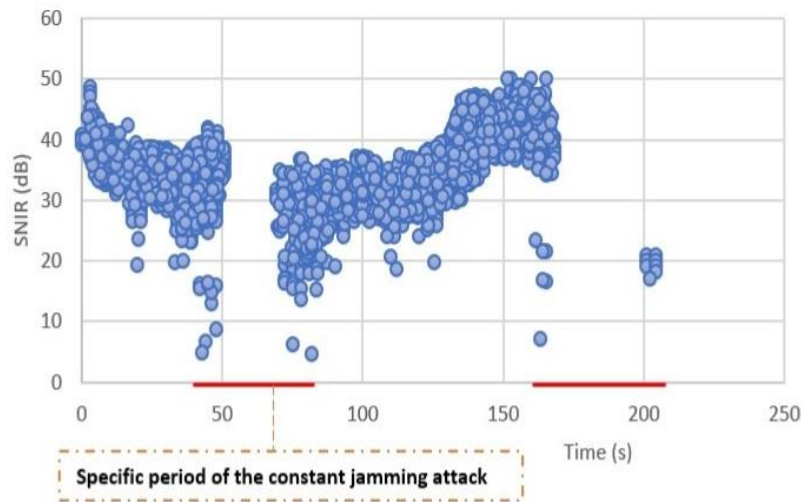


- Explore Machine Learning techniques to identify attacks.
 - Select specific network cases: VANETs (Vehicular Ad hoc Networks)
 - Select recent real traffic datasets.
 - CSE-CIC-IDS2018 dataset

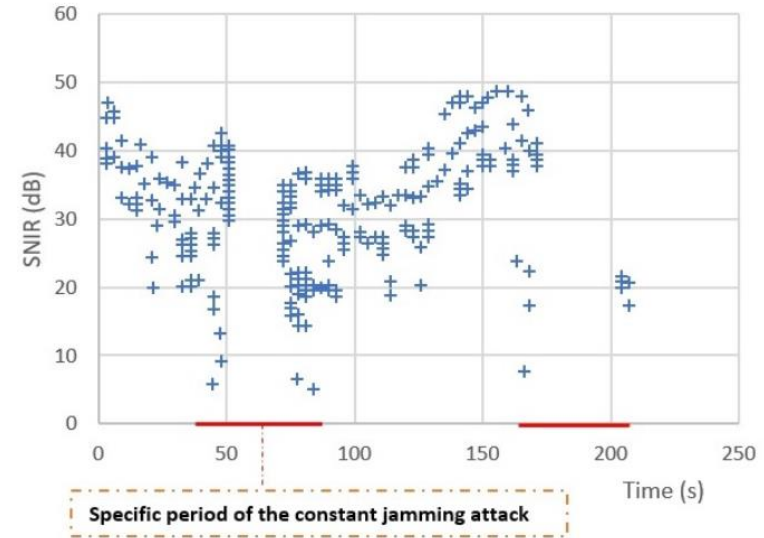
Machine Learning Techniques for Network Intrusion Detection Systems



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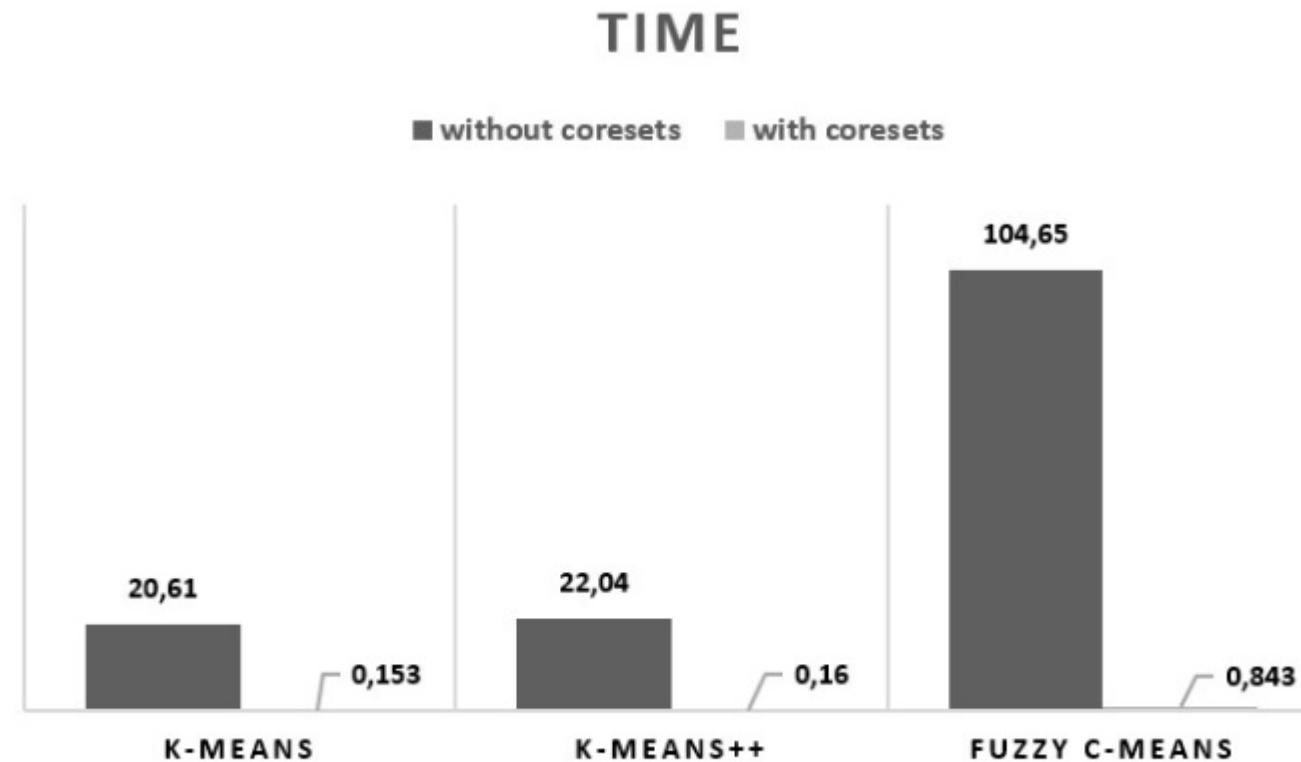


Mapping Time evolution of SNIR for detecting constant jamming attacks (sample size = 25,000)



Mapping Time evolution of SNIR for detecting constant jamming attacks based-Coresets application (sample size = 479)

Machine Learning Techniques for Network Intrusion Detection Systems



Comparison of clustering processing time (s)

Machine Learning Techniques for Network Intrusion Detection Systems

Publications

- Improving Big Data Clustering for Jamming Detection in Smart Mobility
 - BANGUI Hind GE Mouzhi BÜHNOVÁ Barbora, Article in Proceedings Proceedings of the 35th International Conference on ICT Systems Security and Privacy Protection - IFIP SEC, year: 2020
- Towards Faster Big Data Analytics for Anti-Jamming Applications in VANET
 - BANGUI Hind GE Mouzhi BÜHNOVÁ Barbora, Transactions on Emerging Telecommunications Technologies. (Major Revision)
- Enhanced Intrusion Detection of VANETs using Machine learning
 - BANGUI Hind GE Mouzhi BÜHNOVÁ Barbora, Journal paper. (Under Preparation)

Thank you for your attention