Abstract

Mobile Ad hoc networks (MANETs) are susceptible to several types of attacks due to their open medium, lack of centralized monitoring and management point, dynamic topology and other features. Many of the intrusion detection techniques developed on wired networks cannot be directly applied to MANET due to special characteristics of the networks. However, all such intrusion detection techniques suffer from performance penalties and high false alarm rates. In this paper, we propose a novel intrusion detection method by combining two anomaly methods Conformal Predictor k-nearest neighbor and Distance-based Outlier Detection (CPDOD) algorithm. A series of experimental results demonstrate that the proposed method can effectively detect anomalies with low false positive rate, high detection rate and achieve higher detection accuracy.
- Detecting outliers using transduction and statistical testing. In KDD ’06: Proceedings of
the 12th ACM SIGKDD international conference on Knowledge discovery and data mining,
pages 55_64, New York, NY, USA, 2006. ACM.
  - Hongmei Deng, Roger Xu, Jason Li, Frank Zhang, Renato Levy, and Wenke Lee.
Agent-based cooperative anomaly detection for wireless ad hoc networks. In ICPADS ’06:
Proceedings of the 12th International Conference on Parallel and Distributed Systems, pages
  - Yingfang Fu, Jingsha He, and Guorui Li. A distributed intrusion detection scheme for
- Alex Gammerman and Volodya Vovk. Prediction algorithms and con_dence measures
- Yi-an Huang, Wei Fan, Wenke Lee, and Philip S. Yu. Cross-feature analysis for detecting
ad-hoc routing anomalies. In ICDCS ’03: Proceedings of the 23rd International Conference on
Society.
  - A. Karygiannis, E. Antonakakis, and A. Apostolopoulos. Host-based network monitoring
tools for manets. In PE-WASUN ’06: Proceedings of the 3rd ACM international workshop on
Performance evaluation of wireless ad hoc, sensor and ubiquitous networks, pages 153_157,
New York, NY, USA, 2006. ACM.
  - Yang Li, Binxing Fang, Li Guo, and You Chen. Network anomaly detection based on
tcm-knn algorithm. In ASIACCS ’07: Proceedings of the 2nd ACM symposium on Information,
computer and communications security, pages 13_19, New York, NY, USA, 2007. ACM.
  - Yang Li and Li Guo. An active learning based tcm-knn algorithm for supervised network
  - Yihua Liao and V. Rao Vemuri. Use of k-nearest neighbor classifier for intrusion
detection, 2002.
  - C. Siva Ram Murthy and B.S. Manoj. Ad Hoc Wireless Networks: Architectures and
  - Hadi Otrok, Joey Paquet, Mourad Debbabi, and Prabir Bhattacharya. Testing intrusion
detection systems in manet: A comprehensive study. Communication Networks and Services
  - Animesh Patcha and Jung-Min Park. Network anomaly detection with incomplete audit
  - Charles Perkins and Elizabeth Royer. Ad-hoc on-demand distance vector routing. In
90_100, 1997.
Dynamic Intrusion Detection Method for Mobile Ad Hoc Network Using CPDOD Algorithm

- Liwei vivian Kuang. Dnids: A dependable network intrusion detection system using the csi-knn algorithm, 2007

Index Terms
Computer Science Wireless Networks

Key words
MANET Intrusion detection
CPDOD
CP-KNN
Dynamic intrusion detection
Conformal Prediction