Research Topics

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1. A Proposed Security Framework for securing Wireless Sensor Network against active Network Attacks (Wormhole & Sybil).

Wireless sensor networks are considered ad-hoc networks, which comprise of various tiny network nodes. These networks are currently being deployed in various systems, including mobile wireless sensor networks and multi-media wireless sensor networks. Though the use of wireless sensor networks is constantly increasing, the decentralised structure of these networks have introduced new cyber security challenges. Furthermore, the conventional security measures might not effectively resolve the security requirements of a network made of various sensor nodes. Accordingly, This study aims to critically evaluate the vulnerabilities in wireless sensor networks, and also the potential network attacks against such networks, with major focus on wormholes and sybil attacks. Subsequently, the study will propose a comprehensive security framework to aid in effectively securing wireless sensor networks.

Oreku, G. S. and Pazynyuk, T. (2016). *Security in Wireless Sensor Networks*. New York: Springer.

2. A review of the Use of Network Forensics for Securing Internet of Things (IoT) Device and Discovering Cyber Attacks on IoT Appliances.

The Internet of Things (also referred to as IoT) has become a well-known phenomenon in the current technological era, with thousands of smart devices connected to each other through the internet. As a result, both homes and businesses currently use inter-connected appliances, which transmit information via network nodes. IoT developments currently include smart homes, automated car trackers, and smart cities. One of the approaches for securing IoT devices is the use of network forensics, which refer to the investigation of network communications to identify potential cyberattacks or cybercrimes. However, the distributed structure of IoTs has introduced new challenges to network forensics. This is because different devices have different standards and different security measures. This study aims to examine the network structure of IoT devices, and how network forensics can be effectively used to prevent or discover cyberattacks on IoT appliances.

Priyanka, A. and Mayank, D. (2019). *Security and Privacy Issues in Sensor Networks and IoT*. Hershey, PA: IGI Global.