

Wireless Sensor Anomaly Detection Using Soft Computing

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Abstract : We live in an era of rapid development as a result of significant scientific growth. Like other technologies, wireless sensor networks (WSNs) are playing one of the main roles. Based on WSNs, ZigBee adds many features to devices, such as minimum cost and power consumption, and increasing the range and connect ability of sensor nodes. ZigBee technology has come to be used in various fields, including science, engineering, and networks, and even in medicinal aspects of intelligence building. In this work, we generated two main datasets, the first being based on tree topology and the second on star topology. The datasets were evaluated by three machine learning (ML) algorithms: J48, meta.j48 and multilayer perceptron (MLP). Each topology was classified into normal and abnormal (attack) network traffic. The dataset used in our work contained simulated data from network simulation 2 (NS2). In each database, the Bayesian network meta.j48 classifier achieved the highest accuracy level among other classifiers, of 99.7% and 99.2% respectively.

Keywords : IDS, Machine learning, WSN, ZigBee technology

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