

Utilizing Machine Learning for Sensor Fault Detection in Wireless Sensor Networks

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Abstract— This paper discusses the utilization of machine learning for sensor fault detection in Wireless Sensor Networks (WSNs). The WSN comprises many wireless devices with limited processing power, battery life, and memory capacity. Successfully detecting faulty sensors within a WSN can lead to increased efficiency in the fault detection system, reduced network traffic, and lower power consumption. To enhance the network management, researchers sought a technique for detecting sensor defects. In this paper, machine learning techniques are employed to address the issue of failure detection in WSNs. The utilization of machine learning techniques, specifically Kernel Support Vector Machine (SVM) and Artificial Neural Network (ANN), are demonstrated. The paper further compares the performances of the chosen machine learning algorithms in classifying sensor data as faulty or fault-free. The problem is treated as a binary classification problem. The findings of this study contribute to the development of effective fault detection systems in WSNs.

Keyword— fault detection, WSN, SVM, ANN, machine learning



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