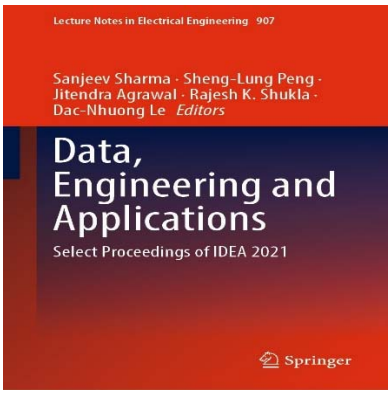

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IoT and Machine Learning Based Anomaly Detection in WSN for a Smart Greenhouse

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Abstract

Agriculture is the most crucial sector which raises the economy of every country; several techniques have been developed to control and monitor the environment in which a particular crop is growing. Famers need efficient support in terms of monitoring the temperature, the humidity, the water supply etc. However, the measurements provided by a wireless sensor network

within a smart greenhouse are an essential aspect to take into consideration when it comes to evaluating the performance of sensor nodes used for controlling and monitoring the climatic condition (temperature, humidity, water supply, etc.). Therefore, this paper proposes a machine learning-based anomaly detection approach with the help of the DBSCAN algorithm of clustering to determine whether an unusual event has been found in the data. This approach allows farmers to ensure the reliability of the network. In this paper, we presented the description of the DBSCAN algorithm; we used an existing dataset that incorporates information about rose cultivation. With the used dataset, we introduced some noise, and we used MATLAB and Python to analyse and predict whether the introduced data is noise or not with DBSCAN. The performance of the algorithm after performing the prediction is 100% for two chosen features of the dataset and 75.4% for five features of the dataset in terms of precision.

Keywords

- **Anomaly detection**
- **Wireless sensor network**
- **Smart greenhouse**

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