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Performance Comparison of Outlier Detection Techniques Based Classification in Wireless Sensor Networks

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Abstract : Nowadays, many wireless sensor networks have been distributed in the real world to collect valuable raw sensed data. The challenge is to extract high-level knowledge from this huge amount of data. However, the identification of outliers can lead to the discovery of useful and meaningful knowledge. In the field of wireless sensor networks, an outlier is defined as a measurement that deviates from the normal behavior of sensed data. Many detection techniques of outliers in WSNs have been extensively studied in the past decade and have focused on classic based algorithms. These techniques identify outlier in the real transaction dataset. This survey aims at providing a structured and comprehensive overview of the existing researches on classification based outlier detection techniques as applicable to WSNs. Thus, we have identified key hypotheses, which are used by these approaches to differentiate between normal and outlier behavior. In addition, this paper tries to provide an easier and a succinct understanding of the classification based techniques. Furthermore, we identified the advantages and disadvantages of different classification based techniques and we presented a comparative guide with useful paradigms for promoting outliers detection research in various WSN applications and suggested further opportunities for future research.

Keywords : bayesian networks, classification-based approaches, KPCA, neural networks, one-class SVM, outlier detection, wireless sensor networks
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