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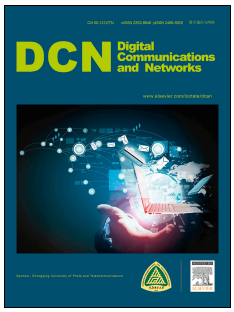

Machine learning for Internet of Things data analysis: A survey

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Machine Learning for Internet of Things Data Analysis: A Survey

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Abstract

Rapid developments in hardware, software, and communication technologies have allowed the emergence of Internet-connected sensory devices that provide observation and data measurement from the physical world. By 2020, it is estimated that the total number of Internet-connected devices being used will be between 25-50 billion. As the numbers grow and technologies become more mature, the volume of data published will increase. Internet-connected devices technology, referred to as Internet of Things (IoT), continues to extend the current Internet by providing connectivity and interaction between the physical and cyber worlds. In addition to increased volume, the IoT generates Big Data characterized by velocity in terms of time and location dependency, with a variety of multiple modalities and varying data quality. Intelligent processing and analysis of this Big Data is the key to developing smart IoT applications. This article assesses the different machine learning methods that deal with the challenges in IoT data by considering smart cities as the main use case. The key contribution of this study is presentation of a taxonomy of machine learning algorithms explaining how different techniques are applied to the data in order to extract higher level information. The potential and challenges of machine

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