Abstract

Internet of Things (IoT) consists of smart objects that communicate together, collect and exchange data. IoT has now a wide range of domain applications such as industry, logistics, healthcare, smart environment, as well as personal, social gaming robot, and smart city. The characteristics required by applications, such as coverage area, transmission data rate, and applicability, refer to the link layer designs of protocols. This paper presents a study of proposed link layer protocols that are used in IoT grouped by short and long distance coverage. For short range protocols, this article study the following: Radio Frequency Identification (RFID), Near Field Communication (NFC), Bluetooth Low Energy (BLE), Low-Rate Wireless Personal Area Networks (LR-WPANs), Z-Wave and IEEE 802.11 a/b/g/n/ah. For the long range protocols, Narrow Band IoT (NB-IoT), Long Term Evolution (LTE), Long Range Protocol (LoRa), and SigFox protocols are considered. A comparative study is performed for each group of protocols, considering their characteristics in order to provide a guideline for researchers and application developers to select the right communication protocol for different applications.
References


Index Terms

Computer Science

Networks

Keywords

IoT, communication protocols, short range protocols, long range protocols, RFID, NFC, BLE, LR-WPANs, Z-Wave, IEEE 802.11 ah, NB-IoT, LTE/LTE-A, LoRaWAN, Sigfox.