Design and Implementation of Internet of Things for Home Environment

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Abstract

An integrated framework for smart home monitoring towards internet of things based on ZigBee and 6LoWPAN wireless sensor networks is presented. The system was developed to retrofit existing sub systems of wireless technologies in order to reduce cost, and complexity. The practical internetworking architecture and the connection procedures for reliable measurement of smart sensors parameters and transmission of sensing data via internet are presented. A ZigBee based sensing system was designed and developed to see the feasibility of the system in home automation for contextual environmental monitoring. The ubiquitous sensing system is based on combination of pervasive distributed sensing units and an information system for data aggregation and analysis. Results related to the home automation parameters and execution of the system running continuously for long durations is encouraging. The prototype system (ZigBee based) was tested to generate real-time graphical information rather than using a simulator or a test bed scenario. A trail has also been performed with 6LoWPAN technology to provide functionality as the ZigBee based system.

The overall internetworking architecture describes the integration of a low power consumption wireless sensor network with the internet. The proposed prototype has advantages in terms of low cost, flexibility of usage. The design of the integrated framework provides a template for other applications related to the Internet of Things.

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