An IoT Cloud Based Architecture for Collecting of RSSI Data in Wireless Sensor Networks

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Internet of Things (IoT) is the nova emergence of connecting devices, people and objects over the Internet as sensors and actuators for a targeted application. Wireless sensor networks (WSN) are a subset of IoT. In WSNs, a group of dedicated sensors are dispersed in a pre-defined area for collecting of physical data in a remote location. Moreover, WSN nodes can be integrated with an IoT cloud architecture to provide data storage, processing and security. This research used the received signal strength indication (RSSI), a quantitative measure of the received signal power from a wireless sensor node to a receiver for indoor localization. We explored the possibility of collecting RSSI as IoT data to a cloud storage server remotely. The research assembled a collection of RSSI by developing hardware and a cloud architecture for publishing the onsite data on remote storage sever. The hardware design of the research includes the implementation of the mobile node, reference nodes and the IoT cloud architecture to send RSSI data. The hardware comprised of star connected WSN nodes, which used on RSSI acquisition using with the ESP8266 microchip as the salient centerpiece of the research and could be formulated for collecting of RSSI with suitable design constraints with low power and size. The microchip has low power operating capability as trait on IoT. The IoT cloud storage for acquisition of RSSI data is managed by a mosquito server in the Message Queuing Telemetry Transport cloud. In the end of the research the validity was checked by the linear relationship between RSSI acquired remotely with the Euclidean distances of each sample point. Our results substantiate the linearity of the data sets which proves the validity of the research.

Key words: Internet of Things, wireless sensor networks, received signal strength indication, message queuing telemetry transport.