Multi-thread based middleware for sensor network virtualization

Abstract:

Wireless Sensor Network (WSN) has led to a new paradigm of Internet of Everything (IoE). In case of Ambient Assisted Living (AAL) that is based on the sensor network is usually deployed for single application. However, the future of WSNs based on sensors lies in the multiple application support and the aggregation of resources either in the form of hardware or software. To deal with the challenges of aggregation of sensors in the health care environment, virtualization of a sensor network is an evolving concept that enables aggregation of multiple independent heterogeneous sensor networks under one roof. In order to virtualize the sensors and networks, middleware layer role is the most dominant one. Furthermore, middleware for sensors poses the overhead challenges like processing time, memory utilization, sampling rate, delay, and power consumption. In this paper efforts have been put forward by proposing a middleware framework for sensor network that uses multi-threading technique that increases the sampling frequency and reduces the delay caused by the hardware abstraction layer that resides on top each sensor node. Mathematical model shows significant improvement in the processing time.

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