Characterization of RSS variability for biobot localization using 802.15.4 Radios

A cyber-physically organized swarm of insect biobots or biological robots can aid first responders in search-and-rescue scenarios after natural disasters or earthquakes by establishing an under-rubble sensor network. In such a network, the nodes are represented by the insect biobots equipped with electronic backpacks utilizing a system-on-chip. This application requires effective real-time localization of the mobile sensor nodes. Radio signal strength (RSS) is a measurement of the received signal power, and can be used in estimating the distance between two nodes, which then can help localize the biobotic sensor nodes in the future. This paper investigates RSS variability and its suitability for biobotic localization.