A NOVEL RSSI-BASED POSITION ALGORITHM FOR WIRELESS SENSOR NETWORKS AND DESIGN OF AN EXPERIMENTAL SYSTEM

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ABSTRACT—At present, although the position theory and algorithm of WSN (Wireless Sensor Network) have been widely researched, however, there still exist many problems on position algorithm needed to be solved, such as low position accuracy and high realization complexity, etc. This paper based on the common trilateral position algorithm uses weighted method to improve the algorithm. The simulation results show that the performance and position accuracy of the improved algorithm is much better than that of the common one. Meanwhile, this paper designs an indoor experimental position system based on the improved algorithm, which selects trilateral ranging method as position method and utilizes CC2510 chip as wireless node. This experimental system realizes indoor position in the 7.4x7.4m² meeting room on the 2A Building’s 10\textsuperscript{th} floor in Science Garden of Harbin Institute of Technology. From the test results, it can be concluded that the practical performance of the improved algorithm is well proved.

Key Words: WSN; experimental system; RSSI; weighted method; position