



A NEW THREE-DIMENSION SPATIAL LOCATION ALGORITHM OF WIRELESS SENSOR NETWORK

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Abstract- Aiming at three-dimensional space localization problem in wireless sensor network, a method of three-dimensional centroid algorithm with spherical perception radius (3DCSPR) is proposed. The algorithm uses Gaussian probability density function to estimate the sensor node radius, and uses tetrahedron method and three-dimensional center to locate unknown node with estimated. Firstly, RSSI value between beacon nodes and destination node is selected by RSSI distribution density function, that confidence interval of nodes perception radius is estimated. Secondly, satisfied tetrahedron is got by the intersections sphere coverage of beacon nodes in three-dimensional. Finally, destination node localization is calculated with weighted centroid in three-dimensional. Simulation results show that the proposed method can significantly reduce positioning errors in three-dimensional network environment in reality and can be widely applied to many fields.

Index terms: wireless sensor network; three-dimensional location; perception radius; centroid algorithm.