



A NOVEL HYBRID LOCALIZATION METHOD FOR WIRELESS SENSOR NETWORK

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Submitted: Mar. 2, 2016

Accepted: June 30, 2016

Published: Sep. 1, 2016

Abstract- Wireless sensor network is a kind of brand-new information acquisition platform, which is realized by the introduction of self-organizing and auto-configuration mechanisms. Node localization technology represents a crucial component of wireless sensor network. In this paper, a localization method based on kernel principal component analysis and particle swarm optimization back propagation algorithm is carefully discussed. First of all, taking KPCA as the front-end system to extract the main components of the localization information, and then regarding the nonlinear principal components extracted from distance vectors as the input samples, and meanwhile taking the coordinates of vertices in addition to the region boundary as the output samples, the PSO-BP neural network is trained to achieve the localization model. Finally the localization of unknown nodes can be estimated. The simulation experiment result showed that the method has high ability of stability and precision, and meets the practical need of localization.

Index terms: Wireless sensor network, localization, kernel principal component analysis, particle swarm optimization, back-propagation algorithm.