ADAPTIVE ESTIMATION AND PI LEARNING SPRING-RELAXATION TECHNIQUE FOR LOCATION ESTIMATION IN WIRELESS SENSOR NETWORKS

Li Haiyan, Hu Yun-an and Zhu Min

Department of Control Engineering

Naval Aeronautical and Astronautical University, Zhifu Zone

Shandong, China

Emails: Haiyanli0609@sohu; hya507@sina.com

Submitted: Oct. 14, 2012 ***Accepted: Jan. 6, 2013*** ***Published: Feb. 20, 2013***

Abstract- In order to reduce the location estimation error in Wireless Sensor Network(WSN). A localization algorithm is proposed combining adaptive estimation, PI-learning and spring-relaxation techniques for wireless sensor networks in this paper. Our proposed method takes the advantages of the spring-relaxation technique, thus it inherits its simplicity. The overall accuracy of the location estimations is improved by introducing adaptive estimation and PI-learning. Moreover, it requires only a few beacons with known locations to compute the location estimates of all sensors. Simulation examples demonstrate the overall accuracy of the proposed method.

Index terms*:* Wireless Sensor Networks, Location Estimation, Adaptive Estimation, Spring-Relaxation Technique, PI learning.