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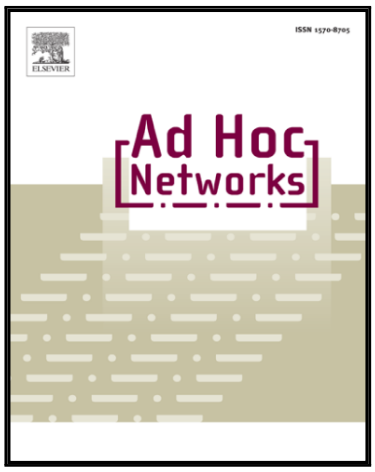

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An accurate Prediction Method for Moving Target Localization and Tracking in Wireless Sensor Networks

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Abstract

With the large use of wireless sensor devices, the interest in positioning and tracking by means of wireless sensor networks is expected to grow further. Particularly, accurate localization of a moving target is a fundamental requirement in several Machine to Machine monitoring applications. Tracking using Received Signal Strength Indicator (RSSI) has been frequently adopted thanks to the availability and the low cost of this parameter. In this paper, we propose an innovative target tracking algorithm which combines learning regression tree approach and filtering methods using RSSI metric. Regression Tree algorithm is investigated in order to estimate the position using the RSSI. This method is combined to filtering approaches yielding to more refined results. The suggested approach is evaluated through simulations and experiments. We also compare our method to existing algorithms available in the literature. The numerical and experimental results show the relevance and the efficiency of our method.

Keywords: target tracking, localization, wireless sensor networks, learning algorithm, pervasive computing, filtering

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