Abstract

Accurate source localization and synchronization is of considerable interest in wireless communications. Localization and synchronization are two important issues which are traditionally treated separately in communication systems and wireless sensor networks. In this paper, we present a unified framework to solve these two problems at the same time jointly. Two algorithms are developed for accurate mobile source localization and time synchronization.
Least Squares Algorithms for Time of Arrival Based Mobile Source Localization and Time Synchronization in Wireless Sensor Networks using the time-of-arrival measurements of the signal. The first algorithm, Least Square (LS) estimator, is derived for joint location and timing estimation which is more computationally efficient. The second algorithm is Weighted Least Square for improving estimation accuracy is proposed. For the joint source localization and time synchronization the Cramer-Rao lower bound (CRLB) is also derived.

References


- K. Dogancay, “Emitter Localization using Clustering-Based Bearing Association,” IEEE

Index Terms

Computer Science
Communication and Networks

Keywords
Synchronization  Cramer-Rao Lower Bound (CRLB)  Least Square (LS) estimator
Weighted Least Square (WLS)