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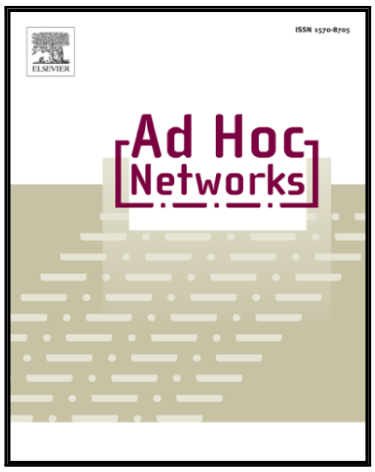

Distributed Sensor Deployment Using Potential Fields

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Distributed Sensor Deployment Using Potential Fields

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Abstract

Maximization of sensing coverage has been an important problem in mobile sensor networks. In this work, we present two novel algorithms for maximizing sensing coverage in 2D and 3D spaces. We evaluate our methods by comparing with two previously proposed methods. All the four methods are based on potential fields. The previous work used the same potential function, however the algorithms we propose use two different potential functions in this work. Potential fields require low complexity, which is crucial for resource lacking mobile sensor nodes. Though potential fields are widely used for path planning in robotics, only a few works use potential fields for coverage maximization in mobile sensor networks. Through simulations, we compare our proposal with the previous algorithms, and show that the algorithm we propose here outperforms previous algorithms.

Keywords: mobile sensor networks, sensing coverage maximization, potential fields

1. Introduction

Sensor networks have many different application areas as diverse as ecological and seismic data collection, disaster recovery and surveillance. The nodes in

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