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Author(s)

Andrei Stancovici ; Mihai V. Micea ; Vladimir Cretu

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Abstract

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Abstract:

This paper presents basic characteristics of the problem of positioning errors propagation in collaborative multi robot environments. We propose two localization methods to achieve a cooperative positioning system using a collaborative autonomous robotic team for indoor surveillance applications. Based on case study simulation results, we were able to evaluate the error propagation process and to obtain the two-dimensional (2D) localization errors for the two proposed methods: Iterative Least Square (ILS) Localization and Backtracking Particle Filter (BPF) Localization.

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Keywords**IEEE Keywords**

Robot kinematics, Surveillance, Acoustics, Robot sensing systems, Collaboration

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surveillance, indoor navigation, iterative methods, least squares approximations, mobile radio, mobile robots, particle filtering (numerical methods)

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cooperative positioning system, backtracking particle filter localization, iterative least square localization, two-dimensional localization errors, collaborative multi robot environments, positioning errors propagation, indoor surveillance applications

Author Keywords

Particle Filter, Ultrasonic Waves, Line of Sight, Indoor Positioning, Collaborative Robots, Least Squares

Authors

Andrei Stancovici

Department of Computer and Information Technology, Politehnica University of Timisoara, Romania

Mihai V. Micea

Department of Computer and Information Technology, Politehnica University of Timisoara, Romania

Vladimir Cretu

Department of Computer and Information Technology, Politehnica University of Timisoara, Romania

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