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Mohammad, N., Muhammad, S., Al-Mouhamed, M.

Design and implementation of reliable auctioning algorithms for multi-robot systems

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Abstract

Reliable coordination among multiple robots is of primary importance in multi-robot systems. For successful coordination there is a need for a reliable communication protocol that carries the messages among the participating robots. This paper proposes reliable peer-to-peer broadcast-based auctioning algorithms for message communication. One of the key features of the proposed algorithms is that they do not need any centralized message (auction) coordination. Further these algorithms allow multiple simultaneous auctions in the system, a more viable condition in multi-robot scenarios. The proposed algorithms are physically implemented and tested on Stargate micro-controllers. The obtained results show practicality of these algorithms and provide several insights for future research in this direction. © 2013 IEEE.

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