Behavior-based connectivity control for robot networks [

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Analítica

Introduction. In this article, we address the problem in which a Multi-robot System (MRS), conforming a Mobile Ad-hoc Network (MANET), has to reach a given goal while maintaining a connected topology with a fixed Base Station (BS). Objective. To design a connectivity control reactive algorithm for a MRS in a goal seek mission. Materials and Methods. Based in the work proposed in (Antonelli, Arrichiello, Chiaverini, & Setola, 2006), an algorithm is proposed that incorporates a Depth First Search (DSF) and implements a set of behavior-based task functions. Moreover, robots can take the role of explorers or relays. Results. The algorithm is validated through computer simulations in a scenario like the one found in (Antonelli, Arrichiello, Chiaverini, & Setola, 2006), but varying the position of the goal. Results show the affectivity of the proposed algorithm. Conclusions. Improvements included in the proposed algorithm provide better flexibility and robustness by allowing the robots to take different roles. Furthermore, the MRS connectivity is maintained even if the goal is farther than the distance it can reach
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