عنوان مقاله:

Motion Planning of a Spherical Robot Using eXtended Classifier Systems

محل انتشار:

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خلاصه مقاله:

In comparison to wheeled robots, spherical mobile robots offer greater mobility, stability, and cope for operation in hazardous environments. In this paper, we propose a direct approach to motion planning based on the notion of Learning Agents" wherein the motions of the robot at consecutive time-steps are determined by a set of condition-action rules that embody the agent. While traditional motion planning schemes rely on pre-planned optimal trajectories and/or feedback control techniques, the learning agent approach enjoys a model-free methodology that enables the robot to function in semi- or even non-observable environments. The approach presented in this paper employs the eXtended Classifier System (XCS) as its learning agent. Results from numerous simulated experiments show that the proposed approach is capable of adopting a near-optimal path towards a predefined goal point from any given .position/orientation

کلمات کلیدی:

spherical robot, motion planning, eXtended Classifier System