عنوان مقاله:

Dynamic Obstacle Avoidance by Distributed Algorithm based on ReinforcementLearning

محل انتشار:

ماهنامه بین المللی مهندسی, دوره 28, شماره 2 (سال: 1393)

تعداد صفحات اصل مقاله: 7

نویسندگان:

F Yaghmaee - *Electrical and Computer Engineering Department, Semnan University, Semnan, Iran*

H.R Koohi - *Electrical and Computer Engineering Department, Semnan University, Semnan, Iran*

خلاصه مقاله:

In this paper, we focus on the application of reinforcement learning to obstacle avoidance in dynamicenvironments in wireless sensor networks. A distributed algorithm based on reinforcement learning isdeveloped for sensor networks to guide mobile robot through the dynamic obstacles. The sensornetwork models the danger of the area under coverage as obstacles, and has the property of adoption ofitself against possible changes. The proposed protocol can integrate the reward computation of thesensors with information of the intended place of robot so that it guides the robot step by step throughthe sensor network by choosing the safest path in dangerous zones. Simulation results show that themobile robot can get to the target point without colliding with any obstacle after a period of learning.Also, we discussed about time propagation between obstacle, goal, and mobile robot information.Experimental results show that our proposed method has the ability of fast adoption in real applicationsin wireless sensor networks

کلمات کلیدی:

Reinforcement Learning, Sensor NetworkDynamic Obstacle AvoidanceRobot Navigation