

عنوان مقاله:

Robot Formation Controller Design Based on Modified ANFIS Approach

محل انتشار:

اولین کنفرانس ملی پژوهش و نوآوری در هوش مصنوعی (سال: 1402)

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خلاصه مقاله:

This paper proposes a formation control technique for leader-follower robots using ANFIS (Adaptive Neuro-Fuzzy Inference System) that reduces the overhead compared to the neural network. It considered four mobile robots; one of them acts as a leader, and other ones are working as the followers. The user predefines the initial position of these robots. Using the proposed technique based on an adaptive neuro-fuzzy system, the robots are formed as the proper shape after limited iterations. Each follower robot adapts to the leader with regard to the leader's speed and angle. Then, the follower robots adjust their distance to the leader. It is assumed that there is no feedback from the followers into the leader; they locate according to the position of the leader and by considering the communication topology. The proposed technique is simulated in MATLAB and the result values indicate higher performance of robots' function compared to previous methods, CA and NFC. Finally, the proposed method is implemented in a real robotic platform and the experimental results show effectiveness of the proposed method in real environment.

کلمات کلیدی:

Formation control, Leader-follower, ANFIS, Iteration

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