工程与应用

基于行为动力学方法的移动机器人轨迹追踪

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摘要　　研究了基于行为动力学方法的移动机器人轨迹追踪。在总结行为动力学理论的基础上，根据轨迹追踪任务要求，确定航向角和速度作为行为变量，同时构建了接近吸引子动力学方程，并在考虑机器人与路径期望点之间距离这一间接耦合参数基础上，建立了速度动力学方程，并分析了该动力系统的收敛性。最后的仿真结果表明该方法正确、可行，且机器人能有效地完成追踪任务。

关键词　　行为动力学方法　移动机器人　轨迹追踪

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Trajectory tracking of mobile robots based on dynamics of behavior

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Abstract

Trajectory tracking of wheeled mobile robots is studied based on dynamics of behavior.The robot's heading direction and velocity are specified as behavioral variables.The tracking attractor dynamic equation and approaching attractor dynamic equation are constructed.The relative distance between the robot and a desired point in a tracked trajectory is integrated into velocity attractor equations as an indirect coupled parameter.The convergence of the dynamical systems is analyzed.At last，the simulation results demonstrate the feasible realization of trajectory-tracking，and also the validity and feasibility of this method is proved.The mobile robot tracks the trajectory effectively.

Key words　dynamics of behavior　mobile robots　trajectory tracking

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