

Discrete Tracking Control of Nonholonomic Mobile Robots: Backstepping Design Approach

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Abstract : In this paper, we propose a discrete tracking control of nonholonomic mobile robots with two degrees of freedom. The electro-mechanical model of a mobile robot moving on a horizontal surface without slipping, with two rear wheels controlled by two independent DC electric, and one front road wheel is considered. We present back-stepping design based on the Euler approximate discrete-time model of a continuous-time plant. Theoretical considerations are verified by numerical simulation. The work was supported by RFFI (15-01-08482).

Keywords : actuator dynamics, back stepping, discrete-time controller, Lyapunov function, wheeled mobile robot

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