Control Law Design of a Wheeled Robot Mobile

Authors : Ghania Zidani, Said Drid, Larbi Chrifi-Alaoui, Abdeslam Benmakhlouf, Souad Chaouch

Abstract : In this paper, we focus on the study for path tracking control of unicycle-type Wheeled Mobile Robots (WMR), by applying the Backstepping technic. The latter is a relatively new technic for nonlinear systems. To solve the problem of constraints nonholonomics met in the path tracking of such robots, an adaptive Backstepping based nonlinear controller is developed. The stability of the controller is guaranteed, using the Lyapunov theory. Simulation results show that the proposed controller achieves the objective and ensures good path tracking.

Keywords : Backstepping control, kinematic and dynamic controllers, Lyapunov methods, nonlinear control systems, Wheeled Mobile Robot (WMR).

Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development Conference Location : Chicago, United States

Conference Dates : December 12-13, 2020