Abstract

This paper presents a comparative study of three different path tracking control laws for the formation of a group of nonholonomic mobile robots. By introducing a unified error of the formation and trajectory tracking using; the dynamic feedback linearization control [1], dynamic-static feedback linearization control [2] and nonlinear time-invariant control [3] are
Comparative Study of Three Different Path Tracking Controls in Mobile Robots

des compared. The simulations results show that the dynamic-static feedback linearization technique presents a stable tracking with smoother behaviour and avoiding discontinuities for tracking trajectory of the robot leader. Finally, this method was implemented experimentally in three different paths formatting a simple triangle with three mobile robots in a leader-follower type motion. Moreover, the analysis in this paper reveals some important issues raising that the following control on this system can be extended to underactuated AUVs in future work.

References

- Tilbury D, R. M. Murray, S. S Satry, "Trajectory generation for the n-trailer problem
Comparative Study of Three Different Path Tracking Controls in Mobile Robots


Index Terms

Computer Science  Control Systems

Keywords

Multiple robot system  formation path tracking  nonlinear control law