A novel leader-following strategy based on fuzzy logic is introduced to design a formation flight controller for unmanned quadrotors. The proposed strategy uses particle swarm optimization (PSO) to optimize the fuzzy membership function in the guidance law, and a nonlinear dynamic inversion (NDI) controller is designed to control the nonlinear dynamics of the quadrotor. The simulation results show the proposed method has significant advantages in comparison with conventional leading-following strategies in terms of robustness against wind gusts, uncertainties, and unknown dynamics.


38. L. Wang, Y. He, Z. Zhang, and C. He, "Trajectory tracking of quadrotor aerial robot using
Robust Nonlinear Fuzzy Formation Control of Unmanned Quadrotors


Index Terms
Keywords

Nonlinear control, Intelligent systems, UAV, Optimization.