عنوان مقاله:

Applying Robust Adaptive Lyapunov-Based Control for Hexa-Rotor

نویسنده:

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خلاصه مقاله:

Drones are among the most valuable and versatile technologies in the world, with applications in a vast number of fields such as traffic control, agriculture, firefighting and rescue, and filmmaking, to name a few. As the development of unmanned aerial vehicles (UAVs) accelerates, the safety of UAVs becomes increasingly important. In this paper, a robust adaptive controller is designed to improve the safety of a hexa-rotor UAV, and a robust adaptive controller is developed to control our system. In doing so, the wind parameters from the aerodynamic forces and moments acting on the hexa-rotor are estimated using an observer with the adaptive algorithm. This proposed controller guarantees stability and reliable function in the midst of parametric and non-parametric uncertainties. The process's global stability and tracking convergence are investigated using the Lyapunov theorem. The performance and effectiveness of the proposed controller are tested through two simulation studies, which take into account external disturbances that are a function of time.

کلمات کلیدی:

Hexa-rotor, Adaptive control, Lyapunov function, Adaptive law, Trajectory tracking

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