New Dynamic Coupling Strategy for Stabilization of Unmanned Swarm Systems

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Talk Abstract

Unmanned Aerial Vehicles (UAVs) or drones have gained significant attention due to their wide range of applications, including surveillance, search and rescue or military operations [1]. More recently the indoor use of drones is considered for wide other reasons such as monitoring of industrial installations or visual inspections. In such environment the drone's navigation suffers from a lack of standard navigation methods based on satellites positioning and even local systems based on Inertial Navigation can be affected by different kind of noises and inherent drift errors. In those conditions a distributed automatic flight system is more accurate and precise considering a single UAV or even a flying swarm formation [2]. Such a system can ensure flight robustness and security for each drone as well as for the environment. In this work a mathematical models based on couplings to suppress chaos and produce a swarm flight stabilization strategy are proposed [3]. A numerical simulation in MATLAB is performed and an experimental setup based on multiple UAV quadcopters is proposed for comparison and physical validation purposes.

Keywords: Unmanned Aerial Vehicles (UAVs), Drones, Surveillance, Unmanned Swarm System.

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