Review of: "Neuro-Fuzzy-Based Adaptive Control for Autonomous Drone Flight"

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Potential competing interests: No potential competing interests to declare.

The manuscript delves into the challenge of controlling and stabilizing a quadcopter drone, a nonlinear, unstable, and underactuated dynamic system. A novel approach is proposed involving designing, developing, and applying an intelligent adaptive hybrid controller. This controller, utilizing ANFIS and LQR techniques, aims to modify its operation dynamically, presenting a promising solution to the complexities posed by UAV drone flight. A literature review was conducted to achieve the study's objectives, offering insights into adaptive control, intelligent control, hybrid control, and the aeronautical characteristics of UAV drone flight. Comparative and empirical analyses of various UAV control algorithms were performed, culminating in a comparison of conventional controllers and the newly developed intelligent hybrid controller. Numerical simulations were employed to evaluate the algorithm's performance, testing the hypothesis that the adaptive controller would surpass traditional control algorithms in overall UAV drone flight control and stabilization. Key observations and findings from the analyses indicate that hybrid controllers outperform traditional counterparts in controlling and stabilizing drone flight. The study proposes that hybrid controllers are more effective and efficient than conventional controllers operating in the same atmospheric environment. In conclusion, the study not only addresses the challenges posed by UAV drone flight but also introduces an innovative solution in the form of an intelligent adaptive hybrid controller. The findings underscore the efficacy of hybrid controllers over traditional methods, paving the way for future research and practical implementations in the field of drone control.