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

Muhammad Asfand Hafeez

Potential competing interests: No potential competing interests to declare.

The article presents a new approach to enhance the stability and control of quadcopter drones. This is done by using an adaptive hybrid controller that combines two control strategies, namely Linear Quadratic Regulator (LQR) and Adaptive Neuro-Fuzzy Inference Systems (ANFIS). The method is designed to address the nonlinear, unstable, and under-actuated dynamics that are typical in drone flight, especially in the presence of disturbances. However, there are a few suggestions that can improve the paper further.

Firstly, the article compares the proposed LQR-ANFIS hybrid controller to traditional control methods. However, a more detailed analysis of the metrics where improvements were observed would offer deeper insights. This would strengthen the argument and make the comparison more effective.

Secondly, the article mentions the use of EKF for nonlinear systems. However, a more thorough explanation of its integration and impact on the overall system performance could be beneficial. This would help readers understand why EKF was chosen over other filters.

Thirdly, the article discusses the advantages of the proposed method comprehensively. However, including a section on encountered challenges, limitations, and assumptions made during the research would offer a balanced view. This would also highlight areas for future research.

Lastly, discussing the broader implications of this research for the future of UAV technology, especially in terms of autonomy and reliability, could help position the paper within the larger context of UAV advancement.