

Model Reference Adaptive Control and LQR Control for Quadrotor with Parametric Uncertainties

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Abstract : A model reference adaptive control and a fixed gain LQR control were implemented in the height controller of a quadrotor that has parametric uncertainties due to the act of picking up an object of unknown dimension and mass. It is shown that an adaptive control, unlike a fixed gain control, is capable of ensuring a stable tracking performance under such condition, although adaptive control suffers from several limitations. The combination of both adaptive and fixed gain control in the controller architecture results in an enhanced tracking performance in the presence of parametric uncertainties.

Keywords : UAV, quadrotor, robotic arm augmentation, model reference adaptive control, LQR control

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