

LQR Based Controller Design for Altitude and Longitudinal Movement of Quad-rotor

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ABSTRACT

Quad-rotor unmanned aerial vehicles have become one of the prominent type of rotorcraft which has been researched massively during the last decade. This study addresses the issue regarding control of quad-rotor under noisy IMU and GPS measurements. Several solutions are provided to resolve the issue of proper controlling of position and altitude of quad-rotor under uncertainties such as noisy measurements but still they are not fully succeeded. This study presents LQR technique for the longitudinal motion control of quad-rotor under noisy sensor measurements. The proposed control technique is simulated on MATLAB. The results of the study show that the applied control technique is effective for altitude and position control of quad-rotor specifically under noisy conditions.

Keywords : Quad-rotor, UAV, LQR, altitude, SONAR, GPS, MATLAB

DOI: 10.3923/jas.2016.588.593