

Altitude and horizontal motion control of quadrotor UAV in the presence of air turbulence

Abstract

Quad-rotor Unmanned Aerial Vehicles (UAVs) have become prominent rotorcraft amongst the helicopter type UAVs. They have been studied immensely in the recent past years. Several issues regarding its position and altitude control have been observed in conditions such as heavy wind gusts. In these circumstances it is necessary for quadrotor to carry a robust controller that responds quick enough to reduce the risk of terrific descent and drift from its original position. This article presents improved PID control technique to hold the horizontal position and descent rate of UAV under intense turbulent environments. The parameters of PID are extracted from auto tuned PID. The proposed control design is simulated on MATLAB platform. The outcomes of the research work demonstrate that under the extreme air turbulence the proposed control design works effectively for altitude and horizontal motion controlling of quadrotor UAV.

Keywords — Quadrotor, UAV, PID, altitude, horizontal motion control