

ABSTRACT

One of the types of UAV (Unmanned Aerial Vehicle) aircraft which is widespread in the community and in the military field is the Quadcopter. Quadcopter can be used for site surveys in the air, documentation, and aerial cinematography. In addition, Quadcopter can be used to conduct secret inspections to track enemy positions, especially in areas that the soldiers is dangerous if they are on there. When the Quadcopter is flying, it usually get a disturbance which can cause the Quadcopter's attitude to be disturbed and cause undesired movements.

In this research used the Fuzzy Logic Control Sugeno type and integrators as control method for the Quadcopter's attitude stabilization system specifically on rolls and pitches axis. The Quadcopter response testing that was tested are the response testing of roll angle with impulse disturbance and a thing which have a weight of 1 ons that was tied on its roll axis, the testing response of pitch angle with impulse disturbance and a thing which have a weight of 1 ounce that was tied on its pitch axis, the testing of Quadcopter 's roll and pitch responses when it was flying and it was tied a weight of 1 ounce on the roll axis or pitch axis, and the simulating of Quadcopter response in roll and pitch using Matlab.

Based on the results of the tests, Quadcopter can maintain its value of roll angle and pitch angle in around the set-point (0°) when it was given a disturbance both when it was flying and when it was not flying using Fuzzy Logic Control and Integrator as a control method with constants of integrator ($K_i=0.01$). The deviation of the Quadcopter oscillation response along its set point value when the Quadcopter gets a disturbance and when tied to one of its axes is between $+5^\circ$ to -5° . The deviation of the Quadcopter response oscillation along its set point value when getting a disturbance and when flying is between $+15^\circ$ to -15° .

Keywords: *Quadcopter, Fuzzy Logic Control, Integrator, Attitude Stabilization of Quadcopter*