ABSTRACT

Unmanned Aerial Vehicle (UAV) or unmanned aircraft is one type of air robot that is currently experiencing rapid development, one of which is a quadcopter. In a quadcopter, automatic take-off and landing are required and precise control systems for auto take-off and landing are accurately influenced by PID (Proportional-Integral-Derivative) which is stable when in the air. Based on these problems, a study was made about the auto take-off and landing quadcopter system with the robot operating system, auto take-off and auto-landing quadcopter using the Extended Kalman Filter, Extended Kalman Filter which later the program will be used by the quadcopter by the Robot Operating System (ROS) with the package. EKF so that the quadcopter take-off and landing in the simulation uses external factors such as wind.

The research shows that the Robot Operating System (ROS) control design uses the Extended Kalman Filter. For the time required for the quadcopter to take-off and landing at a certain height using the Extended Kalman Filter, the results obtained by the quadcopter are more stable in changing the imu plot graphs for variables X, Y and Z in the simulation experiment used with the influence of wind speeds of 10 km / h to 20 km. / h, quadcopter for take-off and landing to fly more stable than using without extended Kalman filter. The results of this final project research get an extended Kalman filter system with a stable performance of X, Y, and Z values close to 0 on the quadcopter imu chart when take-off and landing at a certain height.

Keywords : ***Take off, Landing, Robot operating system,Extended Kalman Filter.***