ABSTRACT

Quadcopter is a robot that has the ability to float in the air with the help of 4 actuator brushless motor mounted on the robot. *Quadcopter* has many functions from as entertainment, video recorder, and exploring a vast place, it is very advantageous for human work because *quadcopter* can see clearly the base of earth from the air. Generally *quadcopter* is supported by WiFi communications (Wireless Fidelity), sensors to find out the tilt and visual on the *quadcopter*, the sensor helps *quadcopter* to make robot more stable in the air and also helps the robot begin to float and land to the ground without any hard dings.

In this final project, the writer will design and implement *Quadcopter* system with PID (Proportional-Integral-Derivative) PID algorithm as robot stability controller, PID controller input is *Accelerometer* and gyroscope sensor, the control is also gradually tested from control P, PD Then PID. This latest task work also includes building a remote control system for *quadcopter* using long radio range 2.4Ghz nRF24l01 module that is able to communicate up to a maximum distance of 1 km.

Quadcopter built using PID controls that output unstable because 4 brushless motors in use are out of sync. The communications used by the quadcopter and remote control are able to communicate well, but the distance traveled only 500 m in due to lack of current of 50 mA flowing from raspberry pi to a radio module that requires 115 mA to send data further.

Keywords : *Quadcopter*, robot ,brushless, radio, *Accelerometer*, gyroscope, remote control, *long range*, PID