ABSTRACT

Unmanned Aerial Vehicle (UAV) or commonly known as unmanned aircraft is a technology that can facilitate human activities such as in agriculture and photography. UAV can be controlled manually or automatically or known as autonomy, in its control UAV often experience a state of instability when holding position while flying in the air.

Maintaining position while flying in the air is very important in controlling the UAV, by relying on position data sent from the Global Positioning System (GPS), the UAV can hold position in the air.

In this study, the author succeeded in making a flight controller that can maintain the position of the quadcopter at a certain setpoint using the STM32F103C8T6 microcontroller combined with the IMU sensor which functions to stabilize the mode, the barometer sensor which functions for altitude hold and the GPS sensor which works to read the longitude and latitude values.

The author uses a PID controller in designing a quadcopter that can maintain its position with the help of GPS. conducted several experiments with or without interference, the results obtained using K_p=3.0; K_d=7.5 the system can return to the setpoint with or without interruption within 30 seconds. If K_i is added, the system has an error percentage of 46% when viewed with a distance graph. The author uses a PID controller in designing a quadcopter that can maintain its position with the help of GPS, but in testing it gets better results if it only uses a PD controller.

Keywords: UAV, GPS Module, *Hold position, Quadcopter*