

## ABSTRACT

Unmanned Aerial Vehicle (UAV) is an unmanned aerial vehicle that has many functions, one of which can be used to photograph, record, monitor and cover an object from the air using a camera mounted on the aircraft. The problem with multirotor is that in stability when the load in the multirotor is not balanced will affect the stability of the UAV and can cause the fall of the UAV in the air. The aim of the study was to design a prototype-scale multirotor (two propellers) and set the speed of the motor to stay balanced with the use of a PID controller.

Parameters  $K_p$ ,  $K_d$ ,  $K_i$  which are components of PID must have the appropriate value in order to produce optimal output. The propeller prototype was designed and developed using a PID controller. The IMU is used to determine the system orientation. Based on this, this research and development aims to stabilize the UAV more precisely in the Frame section by using PID.

In this research has been made a system with a stable balancing propeller on UAVs with a relatively small error state. In this study, the UAV only uses 2 motors, and is stabilized using a Gyroscope through PID i.e. Proportional Integral Derivative. The value of PID is obtained manually with the value of  $K_p = 430.05$ ,  $K_d = 72.09$ , and  $K_i = 0$ .

***Keywords:*** UAV, propeller, proportional integral derivativ