

ABSTRACT

REMOTE WEAPON STATION CONTROLLER BASED ON PALM GESTURE

In the military, remote control is very useful for controlling various types of combat weapons from a distance, so it can reduce the risk of the number of military personnel who become victims on the battlefield. Remote control of weapons can be applied to control the Remote Weapon Station (RWS). To make it easier and more flexible in controlling RWS, control is done by using palm gestures.

In this final project, an RWS controller will be made based on the palm gesture. To identify the palm gesture, a glove that has been paired with a flex sensor and an Inertial Measurement Unit (IMU) is used. The flex sensor that is attached to the radius of the glove will measure resistance from the bend of the finger. IMU will calculate changes in the slope of the palm of the hand using two axes, pitch and roll. The controlling gloves made in this final project is applied to a simple RWS prototype that is paired with an IMU sensor as feedback. The IMU sensor on the RWS prototype will read the pitch and yaw values. Then the difference between the value of pitch angle from the glove and the pitch angle from RWS prototype is the input for the fuzzy logic pitch and the difference in the value of roll angle from the glove and the yaw angle from prototype RWS into is the input for fuzzy logic yaw. The output of fuzzy logic is a pulse width modulation (PWM) signal.

Based on the test results, the RWS prototype can follows well the glove's angle. This can be indicated by the decreasing angle difference on the two motion axes of the RWS prototype. To reduce excessive oscillation, a tolerance of 2° for elevation (vertical) and 3° for azimuth (horizontal) is given.

Keywords – Remote weapon station, Remote control weapon station, Flex Sensor, Inertial Measurement Unit, Fuzzy Logic.