

## ABSTRACT

One of the fairly rapid development of technology today is the technology of robotics. By using robotic technology, all areas of human work is effective and efficient because there are certain conditions that may not be directly handled by humans directly as the need for high accuracy, great power, high speed or high risk. These conditions can be overcome with the use of robots. In his practice, the use of a robotic arm as a work tool that can be controlled via the remote could be an alternative that can be used as a substitute for a human arm to work there.

This thesis is the development of the final project of Khoirudin Fathoni who has designed a robot arm control system based on motion recognition via a joystick with accelerometer. In this thesis designed servo motor speed control system using fuzzy logic control methods that utilize feedback position as input parameters to obtain the level of control that can minimize the position error and shorten the response time required for the robot arm to reach the desired position.

Fuzzy systems have been successfully applied to the servo motor speed control by using position feedback to get a degree difference that will be used as input fuzzy. Servo motor speed can be changed based on the difference the greater the degree of difference in the degree of the speed will be of great value with a maximum speed of 66 rpm and the smaller the difference of degrees, then the speed will decrease with a minimum speed of 8 rpm. Baudrate used at 250kbps, the maximum value can not baudrate in value due to hardware limitations 1Mbps baudrate requires high punctuality when receiving serial data. Position in the system error rate is quite smaller than 20 times just testing error obtained 2 times the value of the position error of  $0.58^0$  with a maximum processing time required by the servo motor to achieve a target of 1.52 s.

Keywords: robot arm, accelerometer, microcontroller, fuzzy logic, speed, baudrate, feedback