

ABSTRACT

One of the fairly rapid development of technology today is the technology of robotics. Using robotic technology, all areas of human work is effective and efficient because there are certain conditions in real life that can not be handled by humans directly as the need for high accuracy, great power, high speed or high risk. These conditions can be overcome by the use of robots. In practice it works, use of the robotic arm as a tool of work that can be controlled via the remote can be an alternative that can be used instead of a human arm to work at the site. There are many techniques for controlling robotic arms that have been implemented either by the introduction of motion through hand gesture recognition is the recognition of human hand motion, by means of a sensor pair in the hand of man. This method is effective for complex robotic arm system. However, for a simple robotic arm system, this method becomes less effective.

Therefore, the final project will be designed and implemented a robotic arm control through joystick-based motion recognition with an accelerometer. ATmega32 microcontroller is used as the main controller. Accelerometer located on the joystick will provide acceleration data in 3D space (x, y, z) which then is processed into motor movement angle for forming a robotic arm. The discussion is focused only on the robot kinematics, robot dynamics are not discussed.

After testing, the maximum error that occurs in the movement is 0.2930. with the fastest response time of 105ms and a maximum of 2.199s.

Keyword: accelerometer, wii-nunchuk, robotic arm, robot kinematics, servo motor AX-12, ATmega32 microcontroller.