

ABSTRACT

The robot arm consists of a mechanical system and a robot arm control system. The mechanical system functions as a container for the motion system in the robot arm. Another term for a system of motion is called the Degree Of Freedom (DOF) or often interpreted as a joint. Then in the robot arm control system, one of which can use the image processing method using the Kinect sensor.

Kinect sensor is a software technology that can detect the joints of the human body and track their movements. In a robot arm control system using a Kinect sensor, the command to move the robot arm becomes easier, faster, and uses less components. In this final project, the focus is on the mechanical system and the movement of the robot arm, for the Kinect sensor-based control system.

The robot arm is designed using an Arduino Mega 2560 microcontroller and an actuator in the form of four servo motors mounted on the joint base, shoulder, elbow, and gripper. The results in this final project are obtained that the four joint robot arms base, shoulder, elbow, and gripper each have angle accuracy errors of 33.6° , 4.8° , 4.3° , and 0° . The robotic arm can move to follow the human arm movement in real time by taking an average of 402.37 milliseconds on the eight arm movements that have been demonstrated.

Keywords: *robot arm, 4 degrees of freedom, Kinect sensor-based control system, Kinect*