

ABSTRACT

Nowadays, the development of science that are so rapidly had triggered the birth of technologies that deliver a positive impact on human life. And the robot is one of technology that appears to facilitate the work of human. Using robotic technology, all areas of human work is effective, practical, and efficient. For example, the use of technology in the field of industrial robotic arm to move a product or goods from a point coordinates to the coordinates of another point without knowing the rest, so it will be able to increase the production capacity of the industry. Or use a robot arm in a dangerous place for humans, for example in nuclear laboratories, the enemy reconnaissance, bomb disposal, and so on.

In this final project, has been designed interface PS/2 mouse into the FPGA that is used to control servo motor AX-12+. Concentration of the design lies in the design of a control robotic arm that integrates the controller between PS/2 mouse, FPGA SPARTAN-3, and servo motor AX-12+. Mouse interface consists of several blocks. Mouse data obtained will be processed by the FPGA that will be synchronized with a UART system block from the servo motor instruction package AX-12+. So that the overall function of the mouse as motor motion controller with FPGA as data processing.

The system has been designed to control the servo motor AX-12+, and only capable of receiving data if the mouse is shifted to the right or left. This is happened because the servo motor is used only one and only capable of rotating clockwise or anticlockwise. Implementation on the Spartan-3 XC3S1000 FPGA of 152,340 kilobytes or equal to 59,50% of total memory FPGA SPARTAN-3 XC3S1000. Data from the mouse which is recognized by the motor is shifted by first converting the shift distance of the mouse (cm) into hex data, which data would be an instruction to control the servo motors AX-12+.

Keyword: robotic arm, PS/2 mouse, servo motors, FPGA SPARTAN-3