

ABSTRACT

Persons with disabilities find it difficult to operate wheelchairs especially those with disabilities who do not have hands and feet or are disabled. The purpose of this research is to design an Electromyograph signal control wheelchair for movement and is equipped with 6 HC-SR04 ultrasound sensors on the front (3 pieces), right side, left side and rear. The contribution of this study is the use of HC-SR04 ultrasound sensors to avoid wheelchairs colliding with obstructions and detection of free areas and corridor areas. The HCSR-04 ultrasound sensor as an input and processed in the Arduino Nano microcontroller circuit produces an Pulse Width Modulation value output based on obstacle distances. Measuring the HC-SR04 ultrasound sensor against obstacles obtained the largest average deviation of 0.72 at a distance of 150 cm and the smallest average deviation at a distance of less than 50 cm and the wheelchair can move at slow, medium and fast speeds with the measurement results on Duty Cycles of 71%, 82% and 94%. The results showed that the final distance of the wheelchair against obstacles was less than 50 cm and the wheelchair moved at a distance of 34 - 53 cm following the wall. The results of this study can control motor speed based on obstacles that can be implemented in electric wheelchairs to improve safety and ease of operation for people with disabilities.

Keywords : *Wheel Chair, Ultrasonic Sensor, Pulse Width Modulation.*