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REAL-TIME HUMAN HAND GESTURE RECOGNITION SYSTEM FOR PROSTHETIC HAND CONTROL

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ABSTRACT

Many of the disable people which use the prosthetic hand have difficult time using their prosthesis at the initial time because they need through training to control their prosthesis. To solve the problem, this study presents a new controlling mechanism that uses the gesture recognition method to control the prosthetic hand. The gesture recognition process use the Kinect Xbox Camera as the input and the Matlab software is use as the medium for gesture recognition process. Arduino microcontroller, Xbee radio frequency module and servo motor are used as the interface to control the prosthetic hand fingers parts. There are two Arduino microtroller and Xbee radio frequency module there were being used with one is connected to the Matlab software to transmit the instruction and the other one is connected to the servo motor at the prosthetic hand to receive the instruction. The application of the Xbee radio frequency module allows the instruction to be transmitted and received wirelessly. The control system for prosthetic hand using gesture recognition system can be considered less cost, easy and natural compared to other methods of control system for the prosthetic hand. By using the skeleton data provided by the Kinect and features extraction for hand detection of the position of the user's hand, user just need to do some gestures using their hand in front of the Kinect camera. As a result, the fingers on the prosthetic hand will move and imitates the movement of the user's fingers. Overall, this hand gesture recognition system by using Kinect camera will give more efficient performance and can help the user of the prosthetic hand to control their prosthesis easily.

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CHAPTER 1
INTRODUCTION

1.1   OVERVIEW

A simple summary about the background of the study is presented in this chapter. Afterward, the drawback at the previous method for prosthetic hand control system and gesture recognition system are explained in the problem statement. The objective and scope of study for this real time human hand gesture recognition system for prosthetic hand control is explained. Lastly, the organization of report for this study is presented in the end of this chapter.