IMAGE RECOGNITION OF ROUND AND SQUARE OBJECTS FOR DIFFERENT GRASPING STYLES BY THREE-FINGERED ROBOT HAND

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ABSTRACT

This paper presents image recognition of several object shapes for grasping tasks by a three-fingered robot hand. The objective of this works is to recognize and count the number of round objects and to use the result to select the reference input position for moving the robot fingers in two different grasping styles. Image recognition on static images is implemented through programming in Simulink and M-file MATLAB. Meanwhile, Simulink program is used to send instruction to the robot main program to select the appropriate grasping style. The experimental results show that the image recognition has successfully recognized and counted the desired objects and used to produce correct output to the robot's main program to select for different grasping styles.

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INTRODUCTION

1.0 INTRODUCTION

1.1 BACKGROUND OF STUDY

One of the main purpose robots were ever built was to assist humans in performing tasks which sometimes is beyond the capability of the human itself. Robot may either help the human to make the work easier or it can replace human effort for the work task. Although robot is considered to have more advantages than human, human proved to be superior due to the human intelligence and flexibility. Therefore, an ideal robot can be interpreted as a device that has the endurance of a machine, and the flexibility and intelligence of a human. Robots can perform hard, strenuous, hazardous, repetitive, boring or dangerous work which causes many task in the assembly line are being replaced with robot. In order to enhance the robot capability, image recognition can be used to provide information about the object being manipulated for different robot application. It helps the robot to identify the correct features of the objects before manipulating the movement of the robotic finger. Image recognition is being the importance aspect in robotic field. It helps the robot to identify the correct features of the objects before manipulating the movement of the robotic finger.

In this work, a three-fingered robot hand is produced which includes the study on image recognition methods. In this work, is facing a problem that is the robotic hand