CHAPTER 1

INTRODUCTION

1.6 Historical Background

Model shape guidance system had been known since it started the generation of robotics in assembled the components in Printed Circuit Board (PCB). The function for these systems is to make the sight of the robot recognize the shape such as electronic components capacitor like capacitor placed in the right position as in desired design.

By capture the photo image in digital format, the vision of the robot can use the present shape taken by comparing it to the database. The ‘sight’ can be provided by understanding the functional of human eyes. By understanding the basic functional of human eyes, the knowledge can be applied to provide a vision to the robot. The ‘recognition’ word means, the systems can make it own decision while being at that place such as decision cornering right or left to avoid an obstacle.

This can be done by given a training to the robot and as a results it can used the information that been trained to it and able to make its own decision, able to relate the example that it had learn than apply to new situation, able to infer fact from incomplete information and capability to generate self motivated goals and formulate plans for meeting the goals.

1.2 Objective

Shape recognition using model chosen in case of the implementation in the robotics vision systems design are requested highly nowadays. The objectives of this project are to:

- Introduce the field of the Digital Image Processing which is widely used nowadays.
- To apply the knowledge about image processing used in so many applications.
- To understand on how the recognition system operates so that they can have better understanding of it.

1.3 Scope of the project

The scope the project is to comparing between the calculated images pixels in database and picture have taken in the real time. The pixel known as Singular Value Decomposition (SVD) been calculated by the program in MATLAB and store in the excel file. The present image taken from the camera will compare the SVD present to the database and this process called neural network.

1.4 Problem Statement

A vision provides a large amount of data, but extracting refined information sometimes may be complex. This is because of the lighting condition, weather and reflection. Furthermore, other difficulties arise from the integration of data. Therefore, in such a practical application it is necessary to know what the vision module is supposed to do and what it is not, in order to simplify the problem. The aim of this vision module is to compute a real world representation that allows the applied robots can perfectly determine

the shape. The computation must be in real-time; a long distance (132.5cm) obstacle detection range is needed in order to start the system decisions.

Furthermore, there are still large gape between human vision and machine vision. Humans can detect, classify, and identify environmental features under widely varying environmental conditions, independent of relative orientation and distance. Current systems, being able to detect only the images stored in database, have very limited perceptual and decisional capabilities. Even though the machine vision still cannot compete with human vision, but human already get many benefit from this technology. The application of this project is such as working at hazardous and poison ness area for human. Example; dealing with poison ness chemicals in the laboratory, pick the chemical and place it into safety place. Another application is seeking for object in hazardous room that contain various different object, so it depend on the training that it had done to identify which object it suppose to pick and bring along as been required.

1.5 Outline Report

The outline of this paper is as follows. Chapter 2 describes the literature review. Chapter 3 discussed about the procedure or methodology for the selected method from all the method in Chapter 2. Chapter 4 presents the demonstration, experiments and result of the outcome to test the feasibility and effectiveness of the approach. Chapter 5 gives the conclusions and future direction of this work.