CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Nowadays robot becomes an important machine due to its increasing use in industry. To improve work efficiency of the robot, gripper has been designed as a mechanical hand and integrated with the robot. It is used to grasp and place a material, tool or part from one site to another site.

The gripper becomes an essential part of a robot and it is wisely used in the automation field. Today, two-jawed gripper more and more frequently used in assembly tasks. It is totally different compared to gripper with a vacuum-based electromagnetic and gripper with electromagnets. Two-jawed gripper required mechanical force and gripper application to move the jaws to grasp an object.

Generally, the industrial robot gripper is a specialized device. It can only used to grip the object which similar in size, shape and weight of the repeated assembly process. In case, to grasp the objects which are different in size, shape and weight, manpower is needed to control the industrial robot gripper manually.

Therefore, sensors and control systems are play a major role in improving the automated gripper. The sensor will attach at the gripper to detect the position of objects to pick up and the environment, the data which detected by the sensor will send to the computer. While the computer control system of the gripper will analysis the data and adjust its subsequent action according to the actual state.
Gripping force is a contact force per unit gripping area to clamp the object. There are various kinds of properties object such as thin wall, soft and fragile. Different type of object required different degree of gripping force to clamp. The computer control system would able to find the suitable gripping force to hold the objects and avoid deformation.

The contribution of gripper shall not only restricted to the industries, likewise the use of gripper shall broaden to the daily life of the household. Thus, to design a proper gripper is important. Other than multitasking ability, criteria such as simplicity, user-friendly, durability, reliability, low cost and low maintenance shall take consider in designing a proper gripper

1.2 PROBLEM STATEMENT

a) Manual control needs experience and time consuming.

b) Large scale robot not suitable for portable tasking.

c) Complex calculation gripper force to grasp the object.

1.3 OBJECTIVE OF STUDY

a) To implement the control system in the motion of gripper.

b) To integrate control system with sensor.

c) To design and build a program for automated gripper.

d) To implement the computer control for the gripper.

1.4 PROJECT SCOPE

This study is focused on four project scope

a) To study the design of mechanical systems and driving mechanisms of the gripper.

b) Sensors attached to the gripper, sensors will send data through the electrical circuit and a parallel port to the computer.

c) Implement a computer control system for data analysis.
d) Data were analysed by the computer control system will control the gripping force and motion of the gripper.
e) Gripper performance based on the type and thickness of the object.

1.5 ORGANIZATION OF THESIS

This thesis consists of five chapters. Chapter 1 presents an introduction. While Chapter 2 highlights the literature review of the article, journal and etc. Chapter 3 explains the methodology for the project. Chapter 4 shows the result of the experiment and the discussion regarding to the results. Finally, Chapter 5 concludes the project and provides recommendations for the project.