**CHAPTER 1**

**INTRODUCTION**

In this chapter, introduction of robotic arm control system using Arduino Mega, aim and objectives and scope of project are described. Robotic arm control system using Arduino Mega provides reliability, safety and reducing time consumption.

* 1. **Introduction of Robotic Arm Control System**

In mass production factories especially automotive industry, workers are facing various problems. D3 (Dirty, Difficult, and Dangerous) works are not suitable to do by human beings. Robots can be used in the branch of technology that vital role in industrial design, heavy machinery operation and bio-surgical robots, as well as computer systems for their control, sensory feedback, and information processing. These advanced technology oriented automated machines that can well perform in the place of human beings in dangerous envy or heavy machinery process, or resemble human beings in appearance, behavior. Nowadays, robots are increasingly being integrated into working tasks to replace humans especially, to perform the repetitive task. Besides, it might be difficult or dangerous for humans to do some specific tasks like picking up explosive chemicals, defusing bombs or in worst case scenario to pick and place the bomb somewhere for containment and for repeated pick and place action in industries. Therefore, a robot is replaced where humans work.

This system is aimed at designing and developing a pick and place robot with a circular gripper in order to accommodate varying dimensions of objects. The soft catching gripper used here to handle objects safety. L298 motor driver is used for the movement of robot. This system is based on the commands of the user and then, the robotic vehicle moves, picks and places. This system is composed of control system and output system. The function of control system is received data from android application and send data to output system. The output system consists of four servo motors to pick and place the objects.

There are so many occasions where the human cannot work. In such situations

without a considerable amount of safety precautions like in the disposal of hazardous wastes, radioactive substances, and lighting and hostage situations among of here, work is impossible. Robots can safety work a hazardous conditions ensuring the human safety and replacing massive human work force. Figure 1.1 shows the block diagram of robotic arm control system.



Figure 1.1. Block Diagram of Robotic Arm Control System

* 1. **Aim and Objectives**

The aim of construction of robot arm control system is to carry or transfer objects by using robotics arm for saving human labor and time. There are eight specific objectives to be performed as follows:

* To learn the concept of Arduino based robot arm control system
* To study about components and how to program via IDE software
* To study about Bluetooth wireless communication system
* To develop the Android application as a control device
* To construct hardware (Arduino based robot arm control system)
* To check the errors of the system while testing
* To test the Arduino based robot arm control system
* To apply practically in the related fields
  1. **Scope of Project**

The scopes of robotic arm control system are: reading the theory background, collecting the theory background, studying the programming language, constructing the design, showing tests and results of the operation, implementing software for this system using Arduino Mega and applying the Android system.

**1.4. Outline of Project**

There are six chapters in this system. In Chapter one, introduction, aim and objectives, scope of thesis, outline of thesis are also described. In Chapter two, the background theory of robotic arm control system using Arduino explained. Main components of the system are discussed in Chapter three. Hardware design and software implementation are described in Chapter four. Test and results for robotics arm control system using Arduino are presented in Chapter five. In Chapter six, discussions, conclusion and further extension are discussed.