CHAPTER ONE
INTRODUCTION

Overview

In this chapter, the introduction of RFID warehouse robot will be discussed, which includes the Aim, objectives, problem statement of the project will also be discussed and the proposed solution.

1.1 Prefaces

RFID is one of the famous applications in the field of industry. Nowadays Radio Frequency Identification (RFID) has become solution in the markets including livestock identification and automated vehicle identification (AVI) systems. [1].

In recent years RFID with improved capability and reduced cost, which become more attractive for inventory and tracking items in businesses and industry. A major push came when retailing giant Wal-Mart dramatically announced that it would require its top 100 suppliers to supply RFID-enabled shipments by January2005 [2].The use of RFID combined with the EPC promises to provide data about products never available before. Many items produced will eventually have their own unique ID numbers. All parts of the supply chain including manufactures, distributors and retailers will be able to have instant access to information about an individual product. RFID is not expected to replace bar codes simply because tags are still too expensive even though their prices have fallen to around 20 cents in volume versus 0.2 cents for a bar code label [3].
Chapter One                                                   Introduction

The warehouse, which can improve the efficiency of Storage and transportation of goods, is widely used in Different kinds of corporations. The current warehouses Which are often operated manually usually include Palletizing robots, carton flow order picking systems, Automated guided vehicles, rotary storage cabinets, and Automated storage and retrieval systems (AS/RSs) [4,5]. The main shortcoming of the current warehouse is that the efficiency of its storage and retrieval systems is very low, which is also a bottleneck to restrict the development of automated warehouse. Therefore, how to improve the efficiency of AS/RSs, and realize intelligent control without manual intervention becomes a very important issue [6].

In recent years, because of its ubiquity, radio frequency identification (RFID) technology has becoming the hotspot in the field of object location. RFID systems use radio transmissions to send energy to a tag which, in turn, emits a unique identification code back to a reader linked to an information management system. If the RFID tags with unique codes are embedded in objects, the identification of the objects can be greatly simplified. Furthermore, RFID has a lot of advantages. For these advantages, RFID technology has been often employed to recognize objects for navigation, and Manipulation etc [7, 8, 9].

1.2 Problem Statement

The process of classification of material and storage is the one of the most important problem that faces the industrial field. Usually the process is done manually, where employees classifying material and storage it, which means it has a lack of accuracy. Also it takes a long time to done this
process. Secondly, some items need special environmentally factors that human can’t bear it.

1.3 Proposed Solution

The proposed idea is to design & implementation a robot which has the ability to classify the items using radio frequency identification by reading tag.

1.4 Aim of the Research

To design robot, which has the ability to identify the items by reading the tag on the items, the robot should pick up the item and navigate to prescribed destination using maps to store the item at the appropriate place and location.

1.5 Objectives

- Design architecture of robot.
- Design of the hardware circuit.
- To create software defined the microcontroller.
- Implementing of the hardware circuit.
- Testing of robot function.

1.6 Methodologies

The system studied and knew how it worked and determined the draw backs. The block diagram has designed system. Select the components that of the needed for designing the system. The RFID has studied a module and knew the characteristics controller and other components have used Arduino ID 1.0.6 programming and simulate it by using Proteus simulator. A robot has designed
the mechanical architecture. Interface the components in the electronics circuit after that implementing of circuit testing function of RFID robot and write achieved results.

1.7 Research Outlines

This research composed of six chapters their details are as follow:

- Chapter Two: covers background theory of robot & RFID technology and also provide a review on related work.
- Chapter Three: examines the system block diagram and the system components.
- Chapter Four: examines the system design, structure and features.
- Chapter Five: will contain the output results from the model under study and final discussions about the results.
- Chapter Six: this chapter presents conclusion of the project outcome and recommendations future work.