An Automatic Rice Dispenser System Using Microcontroller

This report is submitted to the Faculty of Electrical Engineering,

Universiti Teknologi Mara (UiTM)

In partial fulfilment of the requirement for the award of

Bachelor of Engineering (Hons.) in Electrical Engineering.

ACKNOWLEDGEMENT

In the name of Allah the Most Gracious and Most Merciful

I would like to take this opportunity to express my deepest appreciation to the following who were my supervisors, PM. Aisah Mohamed and Datin PM. Wahidah Mansor. They are always there to assist me when I encountered any problems. From their guidance, I found myself not only gain knowledge from my thesis but also learned the communication skill between members. I appreciate the guidance, support and advice from them all the way.

I would also like to thank all the technicians and lecturers from the Faculty of Mechanical Engineering who have assisted and helped me in the mechanical part of my project especially to En. Johari, En. Mat Tolha, En. Helmi and En. Alif. Without them, my project will not be totally completed.

Lastly to my entire friends who has directly or indirectly help and support me. Not to forget, Hasliza bt Abu Hassan who has assisted me till the end of project.

Above and beyond, I would like to thank to all my family members for their financial and moral support toward completing this project.

- This paper has been presented to THE 4TH INTERNATIONAL COLLOQUIUM ON SIGNAL PROCESSING AND ITS APPLICATION (CSPA 2008) on 7-9 MARCH 2008. [9]
- The product (second version) in this project is winning the gold medal in INVENTIONS, INNOVATIONS & DESIGN 2008 in UiTM Shah Alam.[10]

ABSTRACT

A conventional rice dispenser system offers manual way of measuring the amount of rice and often provides incorrect measurements which need to be improved to satisfy the customer's requirements. Furthermore, the rice measurement is based on a cup that is suited for people in the specific country, thus the system cannot be used globally. A solution to these problems is to employ an automatic system that provides correct measurements and flexibility in setting the desired amount of rice. This paper describes an automatic rice dispenser system that allows the user to select the desired measurement, to view the current selections and to have the exact amount of rice. The system uses a microcontroller to read the user's selection, measure the amount of rice, sense the opening of the drawer and check the presence of rice left in the drawer. A conveyor attached to a motor is used to fill in the drawer with rice from the upper container. The measurement process was performed successfully by the software controlling the data transfer between the microcontroller and the interfacing circuits.

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CHAPTER 1
INTRODUCTION

1.0 Introduction

The advances in technology have provided emergence of 'smart' household appliances. The demand for home automation products and services is expected to grow quickly in 2008 and 2009 [1]. Automatic systems become essential and they have been introduced in several household appliances [2]. However, there are still some appliances need to be automated.

A rice dispenser that allows the desired amount of rice to be dispensed manually is widely available. This system has limited operation and does not provide flexibility in setting the rice measurements. Further more, the cup size used for the measurement varies according the country where the system is manufactured and there is no display to allow the user to view the selected rice measurement. An automatic rice dispenser has been invented in 2002; however, it has drawbacks and does not offer better features than the manual system [3].

To overcome the above problems, an automatic rice dispenser system using a microcontroller is proposed. A microcontroller is utilized in this system since its functions and architecture offer simple connections and enable processes to be performed efficiently [4, 5]. The system has distinguishing features that are not available in the conventional systems. It provides a selection of rice measurements and cup sizes, displays user selection, measures exact amount of rice and senses the removal of rice. Since a cup size standard use in various countries is different [6, 7], this system provides an option for the user to select a cup size standard used in two main continents; United States and Japan, and Commonwealth countries. This paper describes the hardware and software design of the automatic rice dispenser system.