



AUTOMATIC WHITEBOARD ERASER SYSTEM

**MUHAMAD HIFZHAN BIN MOHD HASHIM
MUHAMAD NUR HAFIDZ BIN NORDIN**

**FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITI TEKNOLOGI MARA
MALAYSIA**

MARCH 2015

TABLE OF CONTENTS

| | |
|---|-----------|
| ACKNOWLEDGEMENTS | 2 |
| ABSTRACT | 3 |
| LIST OF FIGURES | 4 |
| LIST OF TABLES | 6 |
| LIST OF ABBREVIATIONS | 7 |
| CHAPTER 1: INTRODUCTION | 8 |
| 1.1 Background of Study..... | 8 |
| 1.2 Problem Statement..... | 9 |
| 1.3 Objectives of Research..... | 10 |
| 1.4 Scope of Study..... | 11 |
| CHAPTER 2: METHODOLOGY | 12 |
| 2.1 Methodology..... | 12 |
| 2.1.1 Properties of Arduino..... | 13 |
| 2.1.2 Design Flow Chart..... | 14 |
| 2.2 Experimental Setup..... | 15 |
| 2.3 Equipment and Component..... | 17 |
| 2.3.1 Arduino Uno..... | 19 |
| 2.3.2 Motor driver..... | 20 |
| CHAPTER 3: CIRCUIT DESIGN AND OPERATIONS | 25 |
| 3.1 Schematic Diagram..... | 25 |
| 3.2 Circuit Operations..... | 26 |
| CHAPTER 4: RESULT AND DISCUSSION | 29 |
| 4.1 Software Simulation Result..... | 29 |
| 4.2 Hardware Implementation Result..... | 30 |
| 4.3 Circuit Testing and Troubleshooting..... | 31 |
| 4.4 Data Analysis and Discussions..... | 32 |
| CHAPTER 5: CONCLUSION AND RECOMMENDATION | 34 |
| 5.1 Conclusion..... | 34 |
| 5.2 Recommendation..... | 34 |
| 5.3 References..... | 35 |

ACKNOWLEDGEMENT

We would like to express our special thanks of gratitude to our supervisor Pn. Asfahani Ismail for giving the kind guidance of which we are able to complete the project. Despite of his job as lecturer, she arranged some meetings that could be very useful on our part. We learnt so much during the meeting even though it is just a short meeting. Without her help, it could take us a very long time to complete the project.

During conducting this project, we did ask for help from lecturers to give the guidance. We assist by Sir Nur Faizal bin Kasri. He gave us a few hints during our meeting. We are very impressed by his skill in electrical field. He shown to us some details and we need to find out by ourselves. We also seek for help from Dr. Muhammad Asraf bin Hairudin. In 3 weeks, he gave us some good suggestion for the project. Despite of his work, he still be able to help us in every problem.

Finally, it's our ultimate gratitude to our parents and all lecturers of Elecrical Department for every knowledge that we learnt throughout our 3 years course of study.

ABSTRACT

As world getting excels in technology and science, many things in life have been improvised to make the life easier. Everyday new technology is been developed by the help of creative and complex thinking of the engineers. As the future engineer, designing a new thing can be very helpful towards development of future technologies. The project is about solution for the problems caused by the usage of whiteboard or blackboard and chalk pieces used in the lecture. The problems face by the student and lecturer is most commonly about time and diseases. In lecture, erasing the whiteboard or blackboard is certainly losing the time of lecture to waste. Other than that, disease problem comes from chalk powder. Chalk powder is harmful substances when it is inhale by human which can lead to asthma. Chalk also can hurt the eyes which commonly lead to burning of eyes.

CHAPTER 1

INTRODUCTION

1.1 Background of study

The propose title for this diploma final year project is “Automatic Whiteboard Eraser System”. The idea to develop this project is inspired from lecturers frequently erasing the whiteboard during lecture. Realizing this action can make lecture section time become short, this is when the idea of automated system for the whiteboard appear. This project can serve a lot of advantages or lecturer and students since it will help to reduce the time consuming to erase the writing on the whiteboard.

During the class session, lecturers need to write and erase on the whiteboard frequently depend on how many syllabus they need to teach. But if the erase time can be reduce, much knowledge can be delivered.

So this project has become the solution for these problems. It use Arduino because it easy to use. It does not take too much time to understand the coding.