SPEED MONITORING SYSTEM USING GSM WIRELESS CELLULAR MODEMS

This thesis is presented in partial fulfillment for the award of

Bachelor of Electrical Engineering (Hons.)

UNIVERSITI TEKNOLOGI MARA



MUSTAFA KAMAL BASHA BIN OMAR BASHA FACULTY OF ELECTRICAL ENGINEERING UNIVERSITI TEKNOLOGI MARA (UITM) 40450 SHAH ALAM, SELANGOR, MALAYSIA

ACKNOWLEDGEMENT

A thesis does not just appear out of nowhere, and although it is supposed to be a contribution by one person for a Degree, there are still a lot of people who have helped me out over the years. I have been fortunate enough to have had the support of so many people and without it this would not have been possible. While most people did not help directly on the project, every one of them contributed in some way towards helping me to get where I am today, even things like just being a friend and going out and having fun. Others were responsible for giving me a push in the right direction in life, and for everyone listed here I am eternally grateful for their help.

I'd first like to thank the Almighty ALLAH (SWT) for guiding me through this one and a half year of hard work. Thank you for helping me to make the correct decision even when I am unable to see the path ahead for keeping me healthy, fit and strong.

I sincerely wish to express my gratitude to my supervisor En Muhammad Adib Bin Haron for his support, guidance, patience and encouragement throughout the course of this project. Also, I am greatly indebted to him for his critical review of the manuscript of my thesis.

I would also like to express my gratitude to all people who are not mentioned in this acknowledgement by name, but still have contributed to my work and studies in the past few years. I thank all my relatives, friends and online friends, who supported me through the times when my sanity was fragile and for their patient understanding of my sense of isolation.

My mother-father is the most beautiful woman & man I ever saw. All I am I owe to my mother-father. I attribute all my success in life to the moral, intellectual and physical education I received from them. It is my greatest pleasure to dedicate this small achievement to my parents.

ABSTRACT

This paper presents the Speed Monitoring System using GSM Wireless Cellular Modems for develop the GSM modem to implement design Speed Monitoring System, investigate the effect of Speed Monitoring Implementation on using GSM and MPLAB Programmer, evaluate the effect of GSM to improve system performance and determine the solution for solve an accident problems.

This paper describes a methodology for top-down design, model, MPLAB programmer, hardware design, block diagram of design, digital cellular technology used for transmitting and receiving mobile voice and data services using GSM modems.

This project is the process for monitor the speed using the GSM Wireless. It will be expecting enhancement of project, a design alternative is quite important because with these alternatives, we can switch the product (black box) with the second product to be fit. Enhancement of the product will be based on new technology from our research and development. The main function of this project is safety project for future.

TABLE OF CONTENTS

CHAPTER	DESCRIPTION	PAGE
	SUPERVISOR DECLARATION	ii
	DECLARATION OF ORIGINALITY	iii
	DEDICATION	iv
	ACKNOWLEDGEMENT	v
	ABSTRACT	vii
	TABLE OF CONTENTS	viii
	LIST OF FIGURES	xi
	LIST OF TABLES	xii
	LIST OF ABBREVIATIONS	xiii
	LIST OF APPENDIXES	xv
1	INTRODUCTION 1.1 BACKGROUND	1
	1.2 PROBLEM STATEMENT	2
	1.3 OBJECTIVES OF THE PROJECT	3
	1.4 SCOPE OF WORK	4
	1.5 SIGNIFICANT OF STUDY	5
	1.6 ORGANIZATION OF THESIS	6
2	LITERARY REVIEW	
	2.1 INTRODUCTION	7
	2.1 GSM TECHNOLOGY	7
	2.1.1 GSM architecture	8
	2.1.2 Data services in GSM	11

		2.1.3	Short message service	15
		2.1.4	SMS protocol	16
		2.1.5	Privacy and security in GSM	17
	2.3	M2M	SYSTEMS	18
	2.4	PIC16	5F87X	22
		2.4.1	Device overview	22
		2.4.2	Advantages of Microcontroller	25
	2.5	CONC	CLUSIONS	25
3	ME	гноро	LOGY	
	3.1	DESIG	GN	26
		3.1.1	Introduction	26
		3.1.2	Modeling an M2M system	26
		3.1.3	Modeling an applications	27
		3.1.4	Interfacing the modems with the	
			application	34
		3.1.5	Conclusions	34
	3.2	PROC	GRAMMING HARDWARE	34
		3.2.1	Program Memory Organization	34
		3.2.2	Data EEPROM AND FLASH	35
			program memory	22
		3.2.3	EECON1 and EECON2 Registers	38
		3.2.4	Write Verify	39
		3.2.5	Protection Spurious Writes	39
		3.2.6	Operation While Code FLASH	39
			Program Protection	39
		3.2.7	conclusions	41