INTELLIGENT AUTOMOTIVE VEHICLE SAFETY SYSTEM

This thesis is presented in partial fulfillment for the award of the

Bachelor of Electrical Engineering (Honours)

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ACKNOWLEDGEMENT

All praises be to Allah, Lord of the Universe, the Most Merciful and Beneficent, who has given me strength and inspiration throughout the completion of this final year project.

First and foremost, I would like to take this opportunity to express my sincere gratitude and appreciation to my parents,   and my family for their endless love and support. Your loves are unforgettable.

Special appreciation to my supervisor, Mrs. Aziati Husna Awang for all her efforts in giving me her enthusiastic guidance and encouragement to ensure this project becomes an unforgettable success.

My special thanks also dedicated to Dr. Ahmad Maliki Omar for his invaluable advices, guidance and contributions throughout this final year project.

I also would like to extend my gratitude to all of my fellow friends for always standing beside me whenever I was in needs and difficulties.

ABSTRACT

This paper presents a project on the intelligent automotive vehicle safety system that provides automatic control action to the vehicle braking system. At the same time, the system functions for effective assessment of driver vigilance and warning according to traffic risk estimation.

An obstacle detection system for an automotive vehicle detects obstacles ahead of the vehicle and finds the dynamic relativity between the vehicle and each of the obstacles [7]. Based on the dynamic relativity, information relating to a danger level between the vehicle and each obstacle is operated on so as to make a danger judgment [7].

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CHAPTER 1

INTRODUCTION

1.1   Introduction

Traffic crashes constitute one of the largest public health problems in industrialized countries [9]. Consequently, there has been a strong demand for an improved obstacle detection device or system capable of being furnished at low cost. The above reasoning allows to believe that a successful application of the Intelligent Automotive Car Safety System concept will have important impact on the road safety, namely it may reduce accident rate [9]. This systems is very useful to warn the driver in case of poor visibility that caused by heavy rain, haze or in the dark environment and even when the driver sleepy or in poor vigilance. During the pre-crash period, actions that might be taken is by warning the driver in four levels of dangerous distance with different color of indicator LEDs and different frequency of acoustic signal in proportion to range of distance of obstacle to the vehicle. Meanwhile, the system may also take evasive action by interrupting the operation of the vehicle by automatic braking system.

In developing vehicles for the world market, various legal occupant-safety regulations need to be taken into account depending on the country of destination. Next to requirements addressing individual components, relevant laws also define a variety of crash scenarios together with their maximum effect on the occupants.

In the development of new vehicle sensor systems for identifying crashes and/or sensing occupant data, there are normally two clearly conflicting targets, namely the expense involved (time and cost of development, etc.), and the benefit to the occupant (e.g.; improved occupant restraint).