UNIVERSITI TEKNOLOGI MARA

DRIVING UNDER THE INFLUENCE (DUI) DETECTION SYSTEM

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Thesis submitted in fulfillment
of the requirements for the degree of
Diploma of Electrical Engineering

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FEB 2024

ABSTRACT

The "Driving Under the Influence (DUI) Detection System" project aims to address the alarming rate of accidents caused by drunk drivers in Malaysia, exacerbated by the insufficient enforcement of laws pertaining to impaired driving. Focusing on enhancing road safety, this project addresses the serious problem of drunk driving by developing a prototype for a Driving Under the Influence detection system. The system utilizes an Arduino-Uno as microcontroller, MQ3 and IR sensors for input, and LCD, LED, and Buzzer for output. Arduino IDE is employed for coding, while Proteus 8 Professional is used for circuit and PCB design. Hardware components include MQ3 and IR sensors for alcohol and driver presence detection, respectively, and output is managed through LCD, LED, and Buzzer, with communication facilitated by a GSM module. The expected outcomes encompass successful detection of alcohol presence, accurate identification of the driver's presence, SMS notifications through the GSM module, and seamless functioning of LCD, LED, and Buzzer for effective feedback.

ACKNOWLEDGEMENT

In embarking on this challenging journey to develop the "Driving Under the Influence (DUI) Detection System," I humbly express my deepest gratitude to God for providing me with the strength, guidance, and resilience throughout this project. His unwavering support has been a source of inspiration, motivating me to overcome obstacles and strive for excellence in the pursuit of a safer road environment.

I extend heartfelt appreciation to my dedicated supervisor, Madam Mastura Omar, whose invaluable guidance and expertise have played a pivotal role in shaping the success of this project. Her commitment to excellence, insightful feedback, and encouragement have been instrumental in navigating the complexities of DUI detection technology.

I am profoundly thankful to my friends and parents for their unwavering support, patience, and encouragement. Their collective wisdom, constructive critiques, and willingness to share their knowledge have been indispensable in addressing the challenges faced during the development of this project. Their belief in my abilities has been a driving force, and I am grateful for the lessons learned and the camaraderie shared throughout this journey.

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INTRODUCTION

1.1 Research Background

The urgency of addressing the alarming rise in accidents caused by drunk driving is underscored by global rankings, with Malaysia positioned at number 59 among 183 countries worldwide for road traffic accidents, according to the World Health Organization (WHO). The death rate, standing at 24.51%, categorizes Malaysia at a medium-high level, with the country having the third-highest death rates on roads globally, surpassing even China and India, as reported in [1]. This scenario is consistent with the findings from the Malaysian Institute Road Safety Research (MIROS), which identifies drunk driving as the second most common cause of vehicle accidents in Malaysia, contributing to the second-highest number of lives lost globally among the common accident causes. MIROS's 2012 report reveals that 23.3% of accidents in Malaysia are attributed to drunk driving, presenting a risk 13 times higher than other causes [2]. These compelling statistics highlight the critical need for effective interventions to reduce and prevent road accidents caused by drunk driving. Building upon this existing research, our project on the "Driving Under the Influence (DUI) Detection System" aims to contribute to the mitigation of DUI incidents in Malaysia, providing a tailored and comprehensive solution to address the specific challenges posed by the prevalence of drunk driving in the country. Existing studies highlight the limitations of current enforcement mechanisms and the need for innovative solutions to combat drunk driving. The proposed system integrates advanced technologies such as real-time alcohol level monitoring and facial recognition to enhance the identification and apprehension of intoxicated drivers. The societal impact of reducing alcohol-related accidents is profound, and this project strives to align with broader efforts to enhance road safety, ultimately saving lives and preventing injuries. By delving into the research background, this project aims to provide a solid foundation for the development and implementation of an effective DUI detection system tailored to the specific challenges faced in Malaysia.