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FACULTY OF ENGINEERING

DEPARTMENT OF COMPUTER ENGINEERING

FINAL YEAR PROJECT REPORT

VEHICLE ENGINE LOCK SYSTEM BASED ON ALCOHOL SENSITIVITY

BY

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Final Year Project Report Submitted to the Department of Computer Engineering in Partial Fulfillment of the requirements for the Award of Bachelor of Science in Computer Engineering Degree.

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DECLARATION

I **LUTWETWE SHADRAC DUNCAN**, hereby declare that this project report, written in partial fulfillment of the requirements for the award of a Bachelor of Science in Computer Engineering degree at Busitema University, is my very own authentic work and the content of this document has never been submitted before to the Department of Computer Engineering of Busitema University and any another institution of higher education.

Signature..... **Date**.....28th/09/23.....

LUTWETWE SHADRAC DUNCAN

APPROVAL

This is to certify that this report has been compiled by **LUTWETWE SHADRAC DUNCAN** Registration Number **BU/UP/2019/1200** under the supervision and guidance of the University supervisor. It is now ready for submission to the Department of Computer Engineering.

STUDENT

LUTWETWE SHADRAC DUNCAN

Signature: .....

Date: .....28th/09/23.....

UNIVERSITY SUPERVISOR

MR ARINEITWE JOSHUA

Signature: .....

Date: ....28/09/2023.....

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DEDICTATION

I dedicate this report to the special people in my life who have sacrificed a lot with or without me understanding what they went through to see me reach this stage. I can never pay them enough but only show them my gratitude. This is to my father Mr. Wekesa James, my mother Ms. Nakuti Harriet, my family, my colleagues and FundiBots team among others for the great support. May God surely bless them.

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First and foremost, I would like to thank the Almighty God for enabling me to reach this stage of my academic journey in the midst of various challenges.

Secondly, I wish to extend my gratitude to my supervisor **Mr. Arineitwe Joshua**, his continued supervision, support and guidance has led to the successful completion of this research report on time.

Great thanks to the FundiBots team where I carried out my first internship training for the knowledge and skills, they imparted in me that I am able to apply at this point of time.

I would like to thank my colleagues who have always encouraged me in moments where I felt like giving up.

Lastly, I would like to thank my father who has always supported me financially and has never let me down together with my mother whose spiritual support has kept me going forward.

ABSTRACT

This project report is intended to show how I developed a vehicle engine lock system based on alcohol sensitivity so that it can prevent drunk people from driving. The purpose of the project is to reduce on the number of road accidents that are as a result of driving under influence of alcohol despite of the presence of other causes of road accidents, this project is limited to only those caused by drunk driving. I carried out research on the components required for this project to be a success and I also tested them to make sure they are reliable. I also came up with the schematics of the system i.e. block diagram and then later the circuit diagram that guided me to make sure I successfully design and develop the prototype of the system. I studied the existing systems and compared them to the developed prototype and tabulated the results.

In conclusion the system was fully developed and functioned in the required way as it was able to meet the specific objectives.

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LIST OF ACRONYMS

GPS	Global Positioning System
GSM	Global systems for Mobile communication
AVR	Automatic Voltage Regulator
CPU	Central Processing Unit
ADC	Analog to Digital Converter
VLSI	Very Large-Scale Integration
CISC	Complex Instruction Set Computer
RISC	Reduced Instruction Set Computer
ALU	Arithmetic and Logic Unit
TTL	Transistor Transistor Logic
IC	Integrated Circuit
I/O	Input - Output
UART	Universal Asynchronous Receiver-Transmitter
WHO	World Health Organization
DC	Direct Current

CHAPTER ONE: INTRODUCTION

1.1 INTRODUCTION.

Road accidents are one of the many problems faced in Uganda and highly contribute to deaths and hospitalisation of huge numbers of people. With drunk-driving being one of the causes of these accidents, a lot of collective and individual effort has been devoted to try pull down the increasing number of victims. Breathalysers were introduced by the police at random checkpoints to isolate and arrest people who drive while drunk. But the success of this short-lived due to a number of reasons.

1.2 PROJECT BACKGROUND.

The current scenario shows that most of the road accidents are occurring due to drunk-driving. The drivers who drink alcohol are never in a stable condition and so, reckless driving occurs on highway which can be risky to the lives of the people on road, the driver inclusive. The laws in Uganda are currently prohibiting drivers to drink and drive so that the fine can demoralize them to stop the stated habit. However, the presence of stubborn drivers could be a challenge in the fight against the habit. Such behavior undermines the manual efforts of the authorities geared toward ending drink-driving.

From the NRM manifesto and the national agenda program for 2021- 2026, the NRM government has tried as much as possible to address the challenges within the health sector[1], this has been seen with the recent building of hospitals, monitoring of the drugs, firing and arresting of medical personnel that have been involved in the mismanagement of the medical funds like the recently recorded case from the Mulago National Referral Hospital.

According to the 2021 Annual Crime and Traffic/Road Safety report [2] as the government addressed about the medical sector, a very good number of hospital cases are not disease related but also road accidents. Of the 4,159 road accident fatalities countrywide, 1,390 were associated with drunk drivers while 528 were due to other technical issues. So, with these increasing numbers if the government doesn't address this issue, it will not only affect the transport sector but also the health sector. Though the report declared speed violation is the foremost reason for these accidents, it will safely be inferred that almost all of the cases are because of driver's unstable condition caused by drivers who take alcohol and then intend to drive.

The investigation done by the World Health Organization in 2008 also shows that about 50%-60% of traffic accidents are associated with drink-driving[3]. Moreover, WHO data on road traffic deaths indicated that 1.3million traffic deaths were recorded globally in 2021, with the low-and middle-income countries having higher fatality rates per a hundred thousand population (24.1% and18.4% respectively), information collected showed that several of

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