DEPARTMENT OF COMPUTER ENGINEERING

FINAL YEAR PROJECT 2023

ROAD SIGN DETECTION AND AUTOMATIC VEHICLE MODE CONTROL SYSTEM

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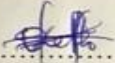Supervised by;

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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 a Bachelor's Degree in Computer Engineering from Busitema University

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DECLARATION

I OKELLO ERIC DENIS, BU/UG/2019/0113 a student of Busitema University, hereby declare that the presented final year project report is prepared by me at Busitema University. I also confirm that this report has been written by me and has never been submitted to any academic institution in Uganda.

SIGNATURE:..DATE: 02/10/2023...............

APPROVAL

This is to certify that this final year report has been compiled by **OKELLO ERIC DENIS** Registration Number **BU/UG/2019/0113** under the supervision and guidance of the University supervisor **DR ODONGTOO GODFREY**. It is now ready for submission to the Department of Computer Engineering.

STUDENT

OKELLO ERIC DENIS

Signature: ....

Date: 27/09/2023

UNIVERSITY SUPERVISOR

DR ODONGTOO GODFREY

Signature: ....

Date: 27/09/2023

ACKNOWLEDGEMENT

I thank the almighty God for my life, and knowledge, my parents and my entire family who have always aided me financially as well as through encouragement and motivation to never give up with my education since I began the journey.

I also would like to express my heartfelt gratitude and appreciation to my course mates, my project Supervisor Dr. Odongtoo Godfrey, who have contributed to the development of this project.

DEDICATION

I dedicate this Final year project report to my mother, my family members, my friends and course mates. I also dedicate it to everyone who has been there for me since the beginning up to now; my teachers, my lecturers, internship trainers, my supervisor Dr. Odongtoo Godfrey and my fellow students who have been with me from the start of the course.

ABSTRACT

The following project details the creation of an RFID-based system that notifies car drivers of impending traffic signage, and help them keep a distance when approaching road anomalies.

Radio-frequency identification (RFID) is a technology that exchanges data between a terminal and an object, such as a vehicle, product or a person, in order to identify and track it. It communicates with the object via electromagnetic waves. Some tags may be read from a distance of several meters and outside the reader's field of vision.

The goal is to create a wireless system that, at the proper distance before the commuter encounters the matching road variations, visibly and audibly communicates road signs (and other road-related information) to the commuter inside his or her car and also revolutionize the way static road signs are used today by offering a more effective and convenient electronic substitute.

The device will help to better enforce traffic law and order, prevent accidents and traffic bottlenecks, as well as lessen reliance on road signs in Ugandan cities and highways.

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A LIST OF ABBREVIATIONS AND ACRONYMS

RFID   Radio Frequency Identification.

IDE   Integrated Development Environment

Adx335   Accelerometer

L298N   H-Bridge Motor driver

CPU   Central Processing Unit

RAM   Random Access Memory

LCD   Liquid Crystal Display

PMW   Pulse Width Modulation

IC   Integrated Circuit

1. INTRODUCTION

1.1. BACKGROUND

Accidents are unfortunate incidents that occur unintentionally and without warning and frequently cause harm, to people, or even death.

According to the World Health Organization (WHO), each year, 1.35 million people are killed on roadways worldwide. Unfortunately, almost 3700 people are killed globally in crashes involving cars, buses, motorcycles, bicycles, trucks or pedestrians daily. More than half of those killed are pedestrians, motorcyclists or cyclists, who also make up the greatest share of victims of mortality and long-term disability from road traffic crashes and are among the working-age population between 15 and 64 years old[1]. Drivers perform multiple actions at the time of driving the vehicle, like using a mobile, drinking while driving, ignoring traffic rules and regulations, and crossing speed limits that are dangerous for their own safety and that of others[2].

Fatal and nonfatal crash injuries have been estimated to cost the global economy approximately $1.8 trillion dollars (in 2010 USD) from 2015 to 2030, which is equivalent to a yearly tax of 0.12% of the global gross domestic product [1].

Most of the traffic accidents are the result of neglectfulness, ignorance of the traffic rules and disobeying traffic sign boards, by the drivers and also people in the society at large.

When someone fails to obey traffic signs, they are putting themselves at risk as well as the lives of pedestrians and other drivers. Speed limit sign boards and traffic signals help reduce traffic on roads, and they are also used to reduce the number of traffic accidents.

There are considerable resource limitations when it comes to traffic safety, with little financing available for traffic management systems, road infrastructure improvements[3],which could help reduce on the road accidents.

Many of Uganda's roads lack signage and proper lighting [3], which can make it challenging for drivers to see and react to traffic changes, especially at night or in bad weather like heavy rains and fog.

The difficulties of driving to work in developing cities like Kampala, Jinja are numerous[3]: having to wait for hours in traffic jams; taking complicated diversions due to on-road construction; attempting to identify speed breakers; navigating blind bends and one-ways streets; and so forth. Some other strange road features one can come across on an ordinary trip include forked roads, railroad crossings, abrupt reversal turns, and steep ascents and descents.

Such road oddities occasionally come with road signage[4]. However, the majority of Vehicle drivers and motorists frequently ignore traffic signage. It makes sense that it would be challenging to pay attention to road signs while driving. The signage' poor visibility and ineffective placement add to the inconvenience accidents are occurring frequently.

7. APPENDICES

7.1. References

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