



FACULTY OF ENGINEERING
DEPARTMENT OF COMPUTER ENGINEERING
TITLE: AN AUDIO SPEEDOMETER SYSTEM FOR MOTORCYCLISTS.

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**A final Year Project Report Submitted to the Department of Computer Engineering in Partial
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University**

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Declaration

I MARIAM NATUKUNDA BU/UG/2013/46 declare that the work in this project proposal report with all its contents was done by only me except where indicated by citations and I would like to point it out that, no one has ever presented or duplicated this kind of report or with any of its contents at any institute of higher learning.

Signature:

Date:

Approval

This is to certify that the final year project under title “**AN AUDIO SPEEDOMETER SYSTEM FOR MOTORCYCLISTS**” has been done under my supervision and is now ready for examination.

Signature Date:

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DEDICATION

I dedicate this report to my lovely parents Mr. and Mrs. B. Bwogi, my siblings Benjie, Ronald, Lucky and Martha for their forever support and motivation in all dimensions, that it would be impossible without you, my friends for the comfort, advice and motivation during the recent hard times. I will always appreciate you for the love you have shown me in this final year. May the Good Lord reward you richly.

I also dedicate it to my project supervisor Mr. Davis Matovu for his tremendous effort and guidance in relation to my project report. The Almighty bless him.

To Jim reeves, wherever you maybe, brother. The memories were awesome.

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LIST OF ACRONYMS

LCD	Liquid Crystal Display
DC	Direct Current
AC	Alternating Current
RPM	Revolutions per Minute
USB	Universal Serial Bus
ICSP	In-Circuit Serial Programming
FTDI	Future Technology Devices International
UART	Universal asynchronous receiver transmitter
SRAM	Static Random Access Memory
ADC	Analog to Digital Conversion
USART	Universal Synchronous Asynchronous Receiver Transmitter
LED	Light Emitting Diode
Hz	Hertz
dB	decibels
ISP	In-circuit Serial programming
RISC	Reduced Instruction Set Computer

ABSTRACT

This project report discusses the design and construction of an audio speedometer system for motorcyclists. The system reads and produces an audio speed. The device has a control button which prompts speed speech on press and displays it alphanumerically on a 16x2 LCD in real time. The system prompts rider to enter their likely maximum speed and if this is exceeded on riding, the rider is alerted by the audio sound. The system is based on an 8-bit RISC AVR microcontroller, the atmega328P-PU. Speed computations are as a result of a hall-effect sensor in close proximity with a magnetic material. The system aims to reduce safety hazards from having to tilt or move one's head when trying to view speed on a motorcycle speedometer, which is usually mounted down by the handlebars.

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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF STUDY.

Rapid advances in computing, telecommunications technologies have transformed the way in which our society undertakes commercial, recreational and educational pursuits. However, not much has been done with regard to motor safety using technology.

According to Annual Crime and Traffic Road Safety Report 2011, 17.3% of deaths were due to motorcycle accidents. Estimates from the World Health Organization show that by 2020, deaths from traffic accidents are projected to rank second to HIV/AIDs [1]. Evidence from annual crime reports shows that road safety in Uganda is poor and has deteriorated over the last 20 years yet more than 70% of Ugandans use public transport as their main means, according to Uganda Bureau of Statistics [2]. In 2008, motor vehicle crash-related deaths involving cars and light trucks reached an all-time low in the United States. At the same time, however, motorcyclist deaths reached an all-time high, more than doubling between 1999 and 2008. The number of people who die due to road traffic accidents grew from 660 in 1991 to 2,954 in 2010 [3].

Evidence shows that as the number of motorcycles rises, the number of accidents will increase (Umar et al, 1995; Widyastuti, 2012). The increase in these accidents is due to the growing number of motorcycles, lack of appropriate road safety interventions and distractions to the riders which include; speedo gazing, involving in conversations with passenger, viewing scenery, pedestrians, driver fatigue and sleepiness, utilizing a cellular phone, looking in the mirror and engaging in conversation with passengers [4]. Overall, motorcyclists have been found to blame in around half of all the accidents they become involved in, so any countermeasures should be targeted at riders [5], any that could ease their efforts with riding.

Current Government efforts towards preventing these traffic road accidents are not systemic. They are not part of the motorcycle as a machine. They include;

- Public awareness campaigns involving motorcyclists, car drivers and passengers. They are carried out with the key message that road safety is a shared responsibility on our roads.
- Regulatory measures for motorcyclists to reduce their accident rates. To qualify, they must pass a written test, an approved driver training course and vision screening.

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