BUSITEMA UNIVERSITY

FACULTY OF ENGINEERING

DEPARTMENT OF COMPUTER ENGINEERING

BACHELOR OF COMPUTER ENGINEERING

AN AUDIO MUTE SYSTEM FOR MOBILE PHONE SPEECH COMMUNICATION

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A PROJECT REPORT SUBMITTED TO THE FACULTY OF ENGINEERING IN PARTIAL FULFILLMENT OF THE REQUIREMENTS OF THE AWARD OF THE DEGREE OF BACHELOR OF COMPUTERENGINEERING OF BUSITEMA UNIVERSITY

APRIL 2016

DECLARATION

I MUTYABA HAMIS Reg No: BU/UP/2010/312, declare that this project report is my original work except where citation has been made and has not been submitted to any Institution of Higher Learning for any kind of award.

Signature ..... Date .....

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APPROVAL

This is to certify that this project report under the title "An Audio mute system for mobile phone speech communication has been done under my supervision and is now ready for examination.

Signature ..... Date .....

Mr. Odongtoo Godfrey

University Supervisor

DEDICATION

To my dear parents Mr. and Miss Katende David who have done their very best to ensure that I get good education and the department of computer engineering for the technical advice they have given me, May the good Lord bless you.

ACKNOWLEDGMENTS

My supervisor, Mr. Odongotoo Godfrey, has been a vital requirement in helping me to accomplish this project report. Thank you so much for the aid offered to me.

Also, I acknowledge all the other department lecturers who have always given me time for consultation regardless of whether they are my supervisors or not, thank you for the helping attitude.

Many fellow students have offered help in form of advice and information and such is greatly recognized.

Special thanks go to my parents for their never ending financial and advisory support. May God reward you abundantly.

Above all, I acknowledge the Almighty God for the gift of life, wisdom and guidance for without Him, I would not have been able to accomplish this project report and system implementation.

LIST OF ACRONYMS

GSM	Global System for Mobile networks
ROM	Read Only Memory
CDMA	Code Division Multiple Access
ANC	Ambient Noise Cancellation
EMF	Electro Magnetic Field
LCD	Liquid Crystal Display
FM	Frequency Modulation
RF	Radio Frequency
GNSS	Global Navigation Satellite System
WLAN	Wireless Local Area Network
LED	Light Emitting Diode
FM	Frequency Modulation
ADC	Analogue to Digital Converter
LTE	Long Term Evolution wireless technology

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ABSTRACT

Receiving or making phone calls in offices, motor vehicles and home sitting rooms around audio devices like FM radio, TV sets, laptops and desktop computers requires muting these devices to ensure good mobile phone speech communication. In this effort therefore it requires the person making a phone call to switch off any of these audio devices manually.

This project involved the development of An Audio mute system for a mobile phone speech communication that can be integrated with in audio devices to automatically mute audio devices to eliminate audio background noise. The system detects an incoming call signal to control the functioning of an audio system. The designed circuit automatically disconnects power supply to the audio system whenever a call is received or made by the cell phone and notifies the user with the LCD and LED.

Although my project worked as expected, there are some improvements that can be made to make the detector circuit more sensitive. Instead of using a cluster of inductors, we can use less number of inductors to make the circuit more compact and small. The major advantages of my project is that it is less costly than the detector circuits available in the market today, such as the Motorola Bluetooth detector.

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CHAPTER ONE: INTRODUCTION

1.0 INTRODUCTION

This chapter includes the description of the background, problem statement, main objective, specific objectives, justification and the scope of the proposed system.

1.1BACKGROUND

Mobile phones are essential component of day to day life and have become the best friend of a man. Day by day they are becoming very affordable making the communication infrastructure as the backbone of daily life. Background noise is a natural part of a conversation. A high background acoustic noise level is annoying to the listener side. Listener fatigue (the ears get tired) and difficult to understand each other. Considerable attention has been paid over the past decade for the enhancement of speech degraded by additive background noise [1]. Listening to speech becomes more difficult as the background noise level dominates. The near-end listener perceives a combination of the clean far-end (downlink) speech and the background noise from audio devices and thus experiences an increased listening effort. In current mobile phone handsets the voice signal that is taken in from the microphone can be filtered and improved, creating a high quality transmit link from you to the other person on the call but receiving a call in a place with background audio noise can make the voice of the person calling you unintelligible. Active and passive noise cancelling technologies can minimize background noise in high end headphones; however these technologies today cannot provide the same benefits in mobile handsets. Passive noise cancellation involves insulation and absorption, typically in the form of cups or cans that surround the ear.[1] Clearly, passive noise cancellation isn't practical for a mobile handset.

Active noise cancellation can be classified as feedback or feed-forward. In headphones a feedback approach is typically used with passive noise cancellation. The headphone "cans" create a sealed cavity over the listener's ear. The noise inside the can is then monitored using a microphone and an electronic feedback circuit is used to generate a noise cancellation signal which tries to create a null, silence, inside the can. [8]It is clearly not practical to create such a sealed cavity around the ear of a person using a mobile phone.

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