BUSITEMA UNIVERSITY

FACULTY OF ENGINEERING

DEPARTMENT OF COMPUTER ENGINEERING

MEDICAL DRIP MONITORING AND AUTO-CONTROL SYSTEM

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Project report submitted to the department of computer engineering as a partial fulfillment of the requirements for the award of a bachelor's degree in computer engineering

May, 2019

DECLARATION

I, Kulaba Brian registration number BU/UP/2015/339 do hereby declare that this Project Report is original and has not been submitted for any other degree award to any other University before.

Signature ..... Date 30/05/2019

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ACKNOWLEDGEMENT.

First and foremost, I thank the almighty God for His grace and unending love that gave me the courage and perfect health to complete this project report. God is the center of everything and without his grace and power nothing is possible. Thank God for being the headline in my life journey and it's by your mercy that this project was a success.

I would like to sincerely and wholeheartedly appreciate Mr. Arineitwe Joshua for his hard work and tireless efforts in guiding me and making sure that I successfully completed this project that subsequently led to the production of this project report. I sincerely appreciate your guidance and advice and also acknowledge all the other department lecturers who have always given me time for consultation, thank you for the helping attitude.

I am so grateful to my parents who always supported me, endured my inconveniences and provided me with support and encouragement, and the opportunity to use them as a sounding board as I wandered through the development of my project. Am also thankful to my brothers, sisters and all people who were involved in this process.

DEDICATION.

I dedicate this project report to my beloved brother and sister Mr Kulaba Geoffrey and Mrs Naguti Juliet for the love and support they have provided to me throughout this project period, my guardians Mrs Ruth Musubika and Musubika Rebecca for the advice and financial support they rendered to me during the research period.

I also dedicate it to my project supervisor Mr. Arineitwe Joshua for his tremendous effort and guidance in relation to my project report, the courage, and the moral & support he offered to me during my research period MAY the almighty GOD BLESS him.

APPROVAL.

This is to certify that the project under the title "**A Drowning alert system**" has been under my supervision and is now ready for examination.

Mr. Arineitwe Joshua

Signature.....

Date.....30/05/2019.....

LIST OF ACRONYMS

TCP/IP	Transfer Control Protocol/ Internet Protocol
HTML	Hipper Text Makeup Language
CSS	Cascading Style Sheet
LED	Light Emitting Diode
RF	Radio Frequency
IOT	Internet Of Things
IDE	Integrated Development Environment
JSON	JavaScript Object Notation

ABSTRACT

Drowning is one of the leading causes of unintentional injury and death globally. Drowning occurs in the oceans, beaches, lakes, ponds, rivers, irrigation canals, animal feeders, swimming pools, spas and bathtubs. Heavy thunderstorms, rain, being frustrated, confused, chocking actions, loss of balance, distress, fear and strong waves strongly lead to drowning in open waters even though when wearing a life jacket. Due to cold waters, a victim can suffer from hypothermia which causes death rapidly even when wearing a lifejacket. The lifesavers who are the other alternative to rescue may not be aware of the drowning people and their locations. This is because drowning victims cannot give a signal to attract the lifesaver's attention.

Many drowning alert systems have been created for the last years but they all base on small ranges of communication. The systems mostly work in swimming pools and small recreation centers. For the sake of transportation, recreation activities in open waters, kayaking, fishing and so many occasions that lead to drowning are not catered for.

The existing systems us Infrared signals to communicate to the life savers which cannot cover a wide area of communication for example in waterbodies. Some others use cameras to show the picture of what is happening in water. These cameras cannot be used in large open waters but work properly in swimming pools.

These faults can all be solved by the use of drowning alert system which determines the body status of the victim, detects drowning automatically and uses GSM to communicate to the software interface of the life savers. The software interface is being held in the command center of the lifesavers.

TABLE OF CONTENTS

DECLARATION i
ACKNOWLEDGEMENT ii
DEDICATION iii
APPROVAL iv
LIST OF ACRONYMS v
ABSTRACT vi
TABLE OF CONTENTS vii
LIST OF FIGURES ix
LIST OF TABLES x
CHAPTER ONE: INTRODUCTION 1
1.1 Background 1
1.2 Problem statement 2
1.3 Objectives 2
1.3.1 Main Objectives 2
1.3.2 Specific Objectives 3
1.4 Justification 3
1.5 Scope 3
1.5.1 Technical scope 3
1.5.2 Geographical scope 3
1.5.3 Time scope 3
CHAPTER TWO: LITERATURE REVIEW 4
2.1 Existing Systems 4
2.1.1 AngelEye 4
2.1.2 POSEIDON-Video based drowning detection system in the swimming pool 4
2.1.3 Wearable devices for early monitoring and alarming for drowning incidents 4
2.3 Existing system comparison table 5
2.2 Proposed System 6
CHAPTER THREE: METHODOLOGY 7
3.1 Requirement gathering 7
3.1.1 Literature review 7
3.1.2 Consultations 7
3.2 Requirement analysis 7

3.2.1 Functional Requirements. 7
3.2.2 Non-functional Requirements. 7
3.3 Systems Design. 8
3.3.1 Hardware tools used in project. 8
3.3.2 Software tools used in project. 8
3.4 System Implementation. 8
3.4.1 Design and implement a system to read victim status and a GPS location reading system. 8
3.4.2 Design and develop a displaying software interface. 9
3.4.3 Linking the system with software interface using the GSM module. 9
3.5 Test and validate the whole system. 9
CHAPTER FOUR: SYSTEM ANALYSIS AND DESIGN 10
4.1 Functional Analysis 10
4.2 Requirements Analysis 10
4.2.1 Functional Requirements 10
4.2.2 Non-Functional Requirements 10
4.3 System Design 11
4.3.1 Logical design of the system. 11
4.3.2 The Physical Design. 12
4.3.3 Schematic Design 13
CHAPTER FIVE: IMPLEMENTATION AND TESTING. 14
5.1 Development Platforms 14
5.1.1 Arduino. 14
5.1.2 Proteus 14
5.2 Code Designs 15
5.3 System Testing. 15
5.4 System Verification. 15
5.5 Validation of the system. 16
5.6 System evaluation 16
5.8 Recommendations. 16
5.9 Conclusion. 16
REFERENCE. 17
APENDEX. 18

LIST OF FIGURES

Figure 4. 1logical design. 11
Figure 4. 2 physical design 12
Figure 4. 3 schematic diagram. 13

LIST OF TABLES

Table 2. 1: Comparison table 4

CHAPTER ONE: INTRODUCTION.

1.1 Background.

Drowning is one of the leading causes of unintentional injuries and death globally. It was estimated that in 2000, 449000 people drowned worldwide. Drowning occurs in the oceans, beaches, lakes, ponds, rivers, irrigation canals, animal feeders, swimming pools, spas and bathtubs[1]. In water, beginners often have difficulty in breathing which causes chocking actions, loss of balance and distress resulting in a drowning accident. Some special circumstances such as cramps, collision of victims with each other, mental stress and so on, also lead to drowning[2]. Adult drowning occurs mostly during water transport, recreational activities such as boating, swimming and diving in open waters[1].

To protect the swimmers, it is recommended to have lifesavers monitoring the waterbody using boats or helicopters. However, these people face challenges like being distracted by other things, lack of the position where victims are when they are in danger among other. This can lead to wastage of time and fuel by the lifesavers while monitoring the waterbody and also its a tiresome action[3]. Even when glare is not an issue, it is likely to be difficult for a lifesaver on one side to see objects beneath the water on the far side[4].

Apart from actual drowning, many deaths in water occur due to hypothermia and cardiac rest. Even though a victim can stay floating with the help of a life vest in cold water, hypothermia can cause death rapidly[1]. Heavy thunderstorms, rain and strong waves can also lead to drowning of a person in open waters even while wearing a lifejacket[5].

In a place called Phuket in china, people drowned to death from a boating incident. Phuket's Governor Norapat Plodthong said rescuers had retrieved at least 32 bodies from the waters while 23 others were missing. 49 were rescued and many victims of the accident drowned despite wearing lifejackets. Many were found floating face-down, a situation life-jackets are meant to prevent[6].

At least 30 people died when a boat capsized in a poor weather of Lake Victoria near the Ugandan capital, Kampala[7]. It took much time for the lifesavers to know the situation and arriving to help in time. Victims would have been saved but since the arrival and the notification to the divers/lifesavers was poor, it led to the drowning of the victims[7]. The ferry, MV Nyerere, sank

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