BUSITEMA UNIVERSITY
Pursuing Excellence

FACULTY OF ENGINEERING

DEPARTMENT OF COMPUTER ENGINEERING

FINAL YEAR PROJECT REPORT

TITLE: A WEB BASED IRRIGATION MONITORING AND CONTROL SYSTEM

BY

WODADAYA NAFUTALI

REGNO: BU/UP/2014/337

Email: nafutalibct@gmail.com

Tel no: 0704145602/0786563092

SUPERVISOR: DR. SEMWOGERERE TWAIBU

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I take this opportunity to thank my Supervisor, Dr. Semwogerere Twaibu who has continuously guided me throughout this project. He has been a parent to me and provided me with the necessary knowledge I needed for this project, may God bless you sir. Not forgetting my father Mr. Guttaka Stephen, mother Mrs. Nabwire Florence, Uncle Musika Fredrick, my brothers, and friends who have provided financially, materially, spiritually until the completion of this project, may God bless you abundantly. I will not forget Busitema University Born Again Pentecostal church they stood with me in prayer and encouraged me, I am so grateful for you people May God bless you. Most important of all, the Lord Almighty my God, who didn't forsake during this project may His name be glorified forever and ever.

DEDICATION

I dedicate this report to my beloved parents Mr. Guttaka Stephen, brothers, Mrs. Nabwire Florence, and Uncle Musika Fredrick for their contribution towards my education.

DECLARATION

I WODADAYA NAFUTALI BU/UP/2014/337 declare that this project proposal report is original and has not been published or submitted before to any university or higher institution of learning.

Sign.....

Date.....05/06/2018.....

APPROVAL

The final year project proposal under the title "**A WEB BASED IRRIGATION MONITORING AND CONTROL SYSTEM.**" has been done under my guidance and is now ready for examination.

Signature .....

Date .....05/06/2018.....

Dr. SEMWOGERERE TWAIBU

Department of computer engineering

LIST OF ACRONYMS

P A	Precision Agriculture
WBIMCS	Web Based Irrigation monitoring and Monitoring System
ET	Evapotranspiration
WBS	Web Based Systems
WWW	World Wide Web
GSM	Global Systems for Mobile Communication
SMS	Short Message Services
IEEE	International Electrical and Electronics Engineers
PHP	Hypertext Preprocessor
LAN	Local Area Network
WAMP	Windows Apache MySQL Hypertext Preprocessor

ABSTRACT

In Uganda, as well as other developing countries, the increasing population stimulates the agricultural-related activities such as irrigation. Irrigation is basically done by humans and generally requires exhaustive physical efforts and involves exposure to errors during irrigation. Despite the advances in the irrigation and its wide spreading applications, irrigation remains majorly manual. Since irrigating is a difficult process especially when irrigating a big piece of land, it is necessary to simplify the process, thus web based system in irrigating was introduced and existing implementations have limitations such as irrigating at wrong hours, continued wastage of water, so prevent all this, a new system that uses a web control to remotely irrigate from a distance has been developed ,therefore main aim of this project is to design and develop a web based irrigation monitoring and control system since it is observed that this method is more reliable and efficient compared to the existing methods. The developed system is able to automatically receive the moisture levels from the field, responds to the different commands sent by the user to do the irrigation and the user is also able to switch on and off the pump. Microcontroller is used to control the function of switching on and off the pump controlling the rate at which water is supplied to the field, the Ethernet shield causes the system to act as a client that keeps pushing readings from the moisture sensor to the database over to the machine where WAMP is installed and the web can be accessed using a router which creates a LAN for the network.

The moisture to be maintained within the field depends on the type of soil, type of the crops this is because it was found out that different types of soils requires a given amount of water and also different types of crops also requires a quantity of water for irrigation and moisture content is dependent on the user requirement.. It was thus observed that the moisture plays an important role in the growth of crops like rice hence moisture is paramount .The system is more economical and is a user friendly system since the system can applied on any piece of land hence it's a viable system.

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CHAPTER ONE

INTRODUCTION

1.1 Back ground.

Agriculture plays a vital role in the development of country's economy; the daily need for food shows the importance of agricultural development. Growing a particular crop in a particular region takes the privilege of monitoring the growth from cultivation until harvesting. One of the main challenges in agricultural activities is irrigation[1]. As the global climate has decreased the source of water throughout the world, it is necessary to take steps for preserving it. However, the people themselves do traditional irrigation management which requires the presence and continuous monitoring of irrigation by the farmers in the field area to check whether the farmland has received sufficient amount water[2]. The user must need to manually change the direction of water flow using large pipes in the field here it creates a need for more labor work and maintenance.

The agriculture systems in developing countries are still labor dependent and do not use any crop management, pest/disease control or quality management systems. The traditional irrigation systems in agriculture use uniform water distribution in fields at regular intervals, which is not optimal. Hence, a technology based agricultural monitoring system which decides itself intelligently and performing the action is needed[3]. Water management is one of the most important tasks in agriculture and efficient water management is a major concern in many cropping systems in semiarid and arid areas[4]. However, the farmers rely on their intuition and experience to determine when and how much water should be provided. Sensing technologies have been highly developed and several test works were conducted.

Precision agriculture (PA), as the name implies, refers to the application of precise and corrects amounts of inputs like water, at the correct time to the crop for increasing its productivity and maximizing its yields and since now days sensor technologies are very much helpful in creating the smart précised environment and this technology has created a new way of research in the field of agriculture [5]. A precise decision or action on water supply for a particular area for cop production is very critical in precision agriculture practices[6]

Irrigation is an essential practice in many agricultural cropping systems in semi-arid and arid areas and efficient water applications and management are major concerns. Self-propelled center pivot and linear-move irrigation systems generally apply water quite uniformly; however,

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