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LIVESTOCK STRAY AND THEFT DETECTION SYSTEM BASED ON WEB OF THINGS.

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I dedicate this project to God Almighty my creator, my strong pillar, my source of inspiration, wisdom, knowledge and understanding. He has been the source of my strength throughout this program and on His wings only have I soared. I also dedicate this work to Lecturers and my Father; Odong Felix who has encouraged me all the way and whose encouragement has made sure that I give it all it takes to finish that which I have started. To my mother; Lamwaka Beatrice, my step mother; Anena Caroline, my brothers and sisters who have been affected in every way possible by this quest.

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DECLARATION

I OKUMU JUSTINE, Registration Number BU/UP/2015/354, hereby declare that this project report is my original work except where explicit citation has been made and it has not been presented to any Institution of Higher learning for any academic award.

…….

OKUMU JUSTINE

BU/UP/2015/354

Date: ……..

APPROVAL

This is to certify that the project report entitled "LIVESTOCK STRAY AND THEFT DETECTION SYSTEM BASED ON WEB OF THINGS" has been done under my supervision and is submitted to the board of examiners with my approval.

Mr. ODONGTOO GODFREY

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Sign: ……

Date: ……..….

LIST OF ACRONYMS

1	MySQL	My Structured Query Language
2	SOC	System On a Chip
3	TCP	Transmission Control Protocol
4	IP	Internet Protocol
5	GSM	Electrocardiography
6	IDE	Integrated Development Environment
7	GPRS	General Packet Radio Services
8	CCTV	Closed-circuit television
9	SMS	Short Message Service

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ABSTRACT

Livestock farming is one of the most important and largest section of agricultural activity carried out in Uganda. Therefore monitoring and control of livestock to avoid them from the risk of getting stolen or getting lost can prevent several losses like income and financial losses that may arise as an effect to such events.

The main objective of the project was to design and developed a livestock stray and theft detection system based on web of things, the system allows real time monitoring of the livestock farm like shows the number of animals which came back from grazing, unauthorized movement of livestock out of the farm and intrusion into the livestock farm. The main aim of this project is to acquire real-time detailed information over the internet falling under the category of web of Things (WOT). Since the farm lands and livestock in Uganda are usually very large scale running into hundreds of acres, in most cases providing security to livestock farms on these large expanses of land can be prohibitively expensive and very stressful. Farmers therefore resort to building fences using sticks and ropes and these provide the only security measure they can adopt. These security measures are trivial and very ineffective as intruders can easily jump over them and cart away with livestock as they can carry without the knowledge of the owners, especially when such fences are built around dark crevices. Looking in to such problems, the web of things technology can be used to get real time information of the livestock farm and knowledge when an intrusion occurs then the necessary actions follow. The system includes PIR sensors that triggers a camera to take images, sends a message via GSM and route the image to a server via a router and Ethernet shield which can then be accessed by any browser supported device. Basing on analysis, the system can help livestock farmers to get real-time information about their farm, hence making them to get informed early and take immediate actions in the scenario of animals getting lost from the grazing land and intrusion or unnecessary movement out of the farm by the animals.

CHAPTER ONE: INTRODUCTION

1.1 BACKGROUND

Agriculture is the practice of animal rearing and crop production [1], it covers a variety of services like marketing, management, research and so on. Agriculture is greatly practiced in Africa and most African countries depend on it for their livelihood with livestock like cows, buffalo, sheep, and goats among others playing an important role in the economy[2].

Livestock production currently accounts for one third of the global crop land which is used to produce feed for animals and competes for land, water, energy and labour which is being challenged by the fancies of climate change and socio economic pressure[3].

The sector according to Food and Agriculture Organization contribute 40 per cent of the global value of agricultural output and support the livelihoods and food security of more than 1.3 billion people globally[4].

In the economic value of Uganda, cattle are considered the most important livestock although other animals such as goats, sheep, pigs and poultry are equally important. The greatest concentration of livestock is found in the "cattle corridor", extending from South-Western to North Eastern Uganda[5].

Livestock are commonly raised for meat, milk, hides, and provision of dung which can be used to create manure or biogas[6].

One of the biggest problem faced by livestock farmers or animal farmers in the villages is livestock theft. While the large scale farmers can afford to invest in large scale security measures and monitoring systems to combat this, thousands of small scale farmers are vulnerable.

Producers have lost truckloads of animals while others are troubled with the persistent loss of one or two. Police describe livestock theft as the most significant rural crime incurring significant financial losses. To the small scale farmers, every herd of cattle, sheep or goat that dies or gets stolen is a serious setback.

Livestock theft does not only affect the farmers, but the entire community as well, the local economy and food security[7].

How theft takes place depends on the type of livestock. The livestock animals are often simply slaughtered in the field at night and the carcasses are cut up and loaded onto pickup trucks. Sheep

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