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AUTOMATIC CONTROL AND DETECTION OF
FAULT IN STREETLIGHT LAMPS.

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May the ALMIGHTY ALLAH bless the works of your hands?

Thanks.

DECLARATION

I, Boss Amuza, hereby declare that this project is completely based on my research work except for citations and quotations which have been specifically acknowledged. It has not been submitted to any other examining body or academic institution for any academic award.

Signature:

.....

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APPROVAL

This dissertation report has been submitted with the approval of the following supervisor

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LIST OF ACRONYMS

GSM	Global System for Mobile Communications
SMS	short message service
LED	Light Emitting Diode
LDR	Light Dependent Resistor
AC	Alternating Current
IC	Integrated Circuit
KCCA	Kampala City Council Authority
RF	Radio Frequency

ABSTRACT

Street lighting provides a safe night time environment for all road users including pedestrians. A research done by D.Steigerward, indicates that night-time vehicular accidents are significantly reduced by the provision of street lighting. It also helps to reduce crime, and encourages social inclusion by providing an environment in which people feel they can walk in hours of darkness.

The objective of the project is to provide automatic control and fault detection on street lamps. The lighting system targets the energy and automatic operation on economical affordable for the streets and immediate information response about the street lamp fault. Moreover, errors which occur due to manual operation can also be eliminated. The street light system is checking the weather for street lamp ON/OFF condition. The weather is light or dark are sensed through a LDR sensor, if the weather is light, the system will switch OFF the lamp. If the weather is dark, the light system will switch ON the lamp. After the LDR sensor checks for light glow or not glow status. If light is not glowing, the sensor sends the value to street light system. The street light system will generate message and send SMS to serviceman mobile number through GSM. This will reduce on the time delay that is previously caused by the former manual system where workers are sent out to drive around manually inspecting street lights.

Fault detection in streetlights is a major problem, therefore I have designed a system which automatically monitors the status of streetlights then alerts the technician by using GSM to send a message to his mobile phone.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Street lighting provides a safe night time environment for all road users including pedestrians. A research done by D.Steigerward [1], indicates that night-time vehicular accidents are significantly reduced by the provision of street lighting. It also helps to reduce crime, and encourages social inclusion by providing an environment in which people feel they can walk in hours of darkness. According to M.A Wazed[2], providing street lighting is one of the most important and expensive responsibilities of a city. Street lighting is a particularly critical concern for public authorities in developing countries because of its strategic importance for economic and social stability. However, inefficient lighting wastes significant financial resources each year, and poor lighting creates unsafe conditions. Energy efficient technologies and design can cut street lighting costs dramatically (often by 25-60%) [3].

As our society grows the need for more energy increases and the cost of this energy as well. Much demand on the available energy sources by increased population is also gradually resulting into serious scarcity of power such that if not properly addressed may lead to a total shut down of industries as well as frequent city blackouts. In Uganda today, there is an alarming increase in population with very little resources especially electricity. When you drive in any major town in Uganda during the day or night, if you are critical enough, you will observe that most of the street lights are always on during daytime since nobody cares to switch them off, meaning that our street lights are always on for 24 hours 7 days a week.

However, many of these street lights are connected directly to the lines without a switch, meaning that they will always be on. Lordache et al [4], says that street lights have a very high luminosity especially the incandescent ones; which are the most common ones in Uganda, which means that they can consume a lot of our power if somebody doesn't switch them off during daytime. In order to have enough power for the all the people, we need to optimize and save enough energy so that it can be used elsewhere.

Outdoor lighting systems, such as lighting roadways, streets, and parking facilities typically include several street lights deployed to improve the safety for drivers, riders, and/or pedestrians.

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