CERTIFICATION

This is to certify that the thesis titled "Development of an optimized weapon management system for government parastatals" by Dala Fanan Moses, meets the requirements and regulations governing the award of the Bachelor of Engineering (Electrical and Electronics Engineering) degree of Covenant University and is approved for its contribution to knowledge and literary presentation.

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parastatals more accountable without limiting the power of the institutions, this project will go a long way in keeping societies peaceful and safe.

1.3 PROBLEM STATEMENT

Over the past few decades, we have seen an exponential increase in the availability and accessibility of information which has led in turn to rapid growth in technological advancements leading to better quality of life for humans.

Military applications of technology are one of the fastest growing areas of technological applications; however, over the past decades, we have experienced numerous cases of weapon theft, terrorism, police brutality, and homicides. Hence there is a strong need to put systems in place to combat illicit firearm flow, unauthorized use and misuse of firearms in order to provide safer and more peaceful societies.

1.4 SIGNIFICANCE OF PROJECT

The proposed system provides government parastatals with a flexible way to manage and secure weapons through the use of IoT. With this systems firearm issued by the government, parastatals cannot be used by unauthorized persons even if they are stolen and it also increases accountability of firearm use by officers thereby preventing misuse of firearms by officers of the law.

1.5 AIM

The aim of this project is to develop an optimized IoT based weapon management system for government parastatals to secure and control the use of firearms. This project focuses on the need to give security institutions flexibility in carrying out their assignment while ensuring accountability of weapon use, preventing unauthorized use

of weapons and preventing misuse of weapons.

1.6 OBJECTIVES

The objectives of this project are to:

1. Identify weaknesses in existing firearm control and monitoring technology systems.
2. Design a robust, reliable and flexible firearm control and monitoring system using IoT.
3. Implement the proposed system.
4. Evaluate the performance of the proposed system.

1.7 METHODOLOGY

The proposed system includes a centralized database that holds information on firearm permissions and authorized user data for registered firearms. These permissions and user data in the database is updated via a web application. The web application also allows administrators to determine whether or not firearms should be locked by default and if they are locked by default how many times authorized personnel are permitted to unlock them and the duration each unlock period should last. The system also consists of locking devices that consist of a micro-controller, Radio Frequency Identification (RFID) sensor, Global Positioning System (GPS) device, wireless network card, and servo motor. , and it consistently polls the database at intervals to update firearm use permissions and user data in its memory. Based on data supplied to it, it uses the RFID sensor to scan RFID code from the palm of the current holder of a firearm and compares

scanned code with code supplied from the database. It also compares location data from the GPS sensor with authorized firearm use location from the database and also checks if the firearm is locked by default or open. If it is locked by default, it checks if authorized personnel has permission to unlock firearm and how long the unlock period should last. If all these conditions are correct, the micro-controller then controls the servo to either open or close the locking device thereby allowing or preventing the use of a firearm. The locking device is designed to fit on existing firearms easily.

1.8 PROJECT ORGANIZATION

The structure of this project has been organized according to guidelines prescribed by the Department of Electrical and Information Engineering in the College of Engineering, Covenant University, as described below:

Chapter One (Introduction)

This contains the aims and objectives of this project. It gives a foundation and insight into the significance and motivation for this project and provides a concise description of the procedure to accomplish the aim of the project.

Chapter Two (Literature Review)

This contains a well-detailed description of the technical review of existing literature of past works related to this project. It describes existing technologies that would be used in or improved upon by the project and describes what the project will add to already existing methodologies that seek to achieve the aim of this project.