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**AUTOMATIC PLASTICS PICKING ROBOT**

**BY**

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**DECLARATION**

I NANGILA BARBRA GEORGIANA hereby declare that this final year project 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.

Signature: .....

Date: .....

**APPROVAL**

This is to certify that the final year project report under title “Automatic Plastics Picking Robot” has been done under my supervision and is now ready for examination.

SIGNATURE.....

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## **LIST OF ACRONYMS**

**LDPE**      Low Density Polyethene

**HDPE**      High Density Polyethene

**PE**         Polyethene

**AGATOR**   Automatic Garbage Collectors

**NEMA**      National Environmental Management Authority.

## **ABSTRACT**

Plastics is the term commonly used to describe a wide range of synthetic or semi-synthetic materials that are used in a huge and growing range of applications. We use plastic products to help make our lives cleaner, easier, safer and more enjoyable. This has increased on the amount of plastics littered in our environment which is harmful especially after single use. Plastic waste pose serious environmental pollutions and health problems in humans and animals. Most plastics have an indefinite life span and will probably still be mixed in the soil of this planet thousands of years from now. The disposal and collection methods have not been very helpful in reducing in the amount of plastics littered in the environment. Therefore, this study aimed to develop an Automatic Plastics Picking Robot that was to pick plastics from the environment and place them into the bin attached onto it. This was achieved using different forms of literature and observations, requirement analysis and design of system modules, testing and validation. In this system three major functionalities have been achieved namely: Automatic picking of the plastic on the environment, automatic detecting of the level of plastics in the bin attached onto it, and alerting the user when the bin attached onto it is full of plastic waste.

In conclusion, this robot will be able to reduce on the amount of the plastics dumped in the environment.

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## **CHAPTER ONE: INTRODUCTION**

### **1.1 Background of the Study**

Plastics have become increasingly popular for industrial and consumer uses since their emergence in the 1940s. The volume of plastic manufacture each year continues to rise rapidly with the quantity produced in the first decade of the 21<sup>st</sup> century approaching the total produced during the entire century prior. Today, approximately 260 million tons of plastics are produced for various purposes worldwide on an annual basis and Worldwide[1]. About 4 to 5 trillion polyethylene plastic bags being produced annually. The benefits of plastic are undeniable i.e. material is cheap, lightweight easy to manufacture, which favored their use in manufacturing and meeting various consumer needs[2]. These qualities have led to a boom in the production of plastic over the past century. This trend will continue as global plastic production skyrockets over the next 10 to 15 years.

The majority of these plastics are discarded as waste usually after single use[5]. The single use plastics, commonly referred to as disposable plastics are mostly used for plastic packaging and they include items intended to be used only once before they are thrown away or recycled. These include, among other items, grocery bags, food packaging, bottles, straws, containers, cups and cutlery. They persist on this earth to haunt us and our generations for centuries. Polythene chokes the drains and the water bodies, pollutes the land and poisons us slowly but surely[2]. Plastic bag wastes pose serious environmental pollutions and health problems in humans and animals. Most plastics have an indefinite life span and will probably still be mixed in the soil of this planet thousands of years from now.

The use and availability of plastics has increased significantly recently while collection and disposal of plastic litter continues to be a growing problem in Uganda. Some of the impacts of the littered plastic waste include; First, plastics pose serious environmental challenges due to its non-biodegradable characteristics and eventually causes an economic loss to tourists by affecting many vital sectors such as tourism[6]. Secondly, plastic wastes block channels and pipes creating serious storm water problems and create breeding areas for disease vectors such as mosquitoes. Thirdly, plastic wastes that find their way into the sea and other water bodies kill aquatic wildlife when the animals ingest the plastics mistaking them for food. Fourth, consumption of plastic bags by

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