BUSITEMA UNIVERSITY
Pursuing Excellence

TEXTILE ENGINEERING

FACULTY OF ENGINEERING

DEPARTMENT OF TEXTILE AND GINNING ENGINEERING

AN ANDROID APPLICATION FOR AUTOMATIC DETCETION OF YARN DEFECTS USING ANDROID STUDIO

BY

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A FINAL YEAR PROJECT REPORT SUBMITTED IN PARTIAL FULFILLMENT OF THE

REQUIREMENTS FOR THE AWARD OF A BACHELOR OF SCIENCE IN TEXTILE

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DECLARATION

I solemnly, do hereby, declare to the best of my knowledge that the contents of this project was done by only me, from my own hard work save for a few references indicted therein, and I would like to point it out that, no one has ever presented or duplicated this project or with any of its contents at any institute of higher learning.

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KAKOOZA GEOFREY

BU/UG/2013/90

APPROVAL

This is to certify that the project under the title "AN ANDROID APPLICATION FOR AUTOMATIC DETCETION OF YARN DEFECTS USING ANDROID STUDIO" has been made under my supervision and is now ready for examination.

Supervisors;

Name: Dr. NIBIKORA ILEDEPHONSE

Signature: _____

Date: _____

Name: Mr. KASEDDE ALLAN

Signature: _____

Date: _____

ACKNOWLEDGEMENT

I would love to extend my gratitude to a number of persons with whose efforts have managed to progress and put a landmark in my education.

First and foremost, I would like to thank the almighty God for giving me the strength to carry on with my final year project research.

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Lastly, to all my course mates with whom I studied with at Busitema University, thank you for the team cooperation.

DEDICATION

With great honor, I greatly dedicate this report to the almighty GOD, who has enabled me be alive and able to understand the all the research I have carried out concerning my project

I also dedicate this report to my parents; Mr. Muyingo Richard and Mrs. Nalubega Agnes for their hard work, love and support to make me a successful creature through attaining cream education.

I dedicate this report to all the course-mates Asiku Geofrey, Engola Felix, Ouma Isma, Alibet frances, Bwesigye Edward, Nabasirye Josephine and Aryek Jennifer and on top of that my best friend ojambo henry that have been so cooperative in whatever we put hands on and for the love they show me.

At the same time, I dedicate this report to the Busitema University born again Pentecostal church.

I dedicate this report to the Christian union Busitema University.

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ABSTRACT

The developed application was expected to be acceptable because of its accuracy, much lower cost, mobility and user friendliness. The application is equally useful for coloured yarns with change of background. The system was used to furnish diameter variation excluding hairs as irregularity measure. But the capacitive tester included mass of hairs in irregularity measurement. Hence, it showed a better representation of unevenness.
It also provided a tester free of electromagnetic interference and radio frequency interference and it was of a much lower price than its commercial counterpart as someone can just share it to you.

LIST OF TABLES

LIST OF ACRONYMS

USB: Universal Serial Bus

TPI: Twist Per Inch

PMD: Percentage Mean Deviation

C.V: Coefficient of Variation

U.S.A: United States of America

JVM: Java Virtual machine

CCD: Charge Coupled Device

CMOS: Complementary Metal Oxide Semiconductor

MATLAB: Mathematics Laboratory

LBP: local Binary Patterns

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CHAPTER ONE

INTRODUCTION

1.1. BACKGROUND OF THE STUDY

Quality assurance for yarn is one of the most concerns taken for the production of a quality fabric in return. This is as a result of the day to day growth of the textile industry which has in turn led to increased competition for market of the manufactured textiles since quality yarn is the main determinant of the fabric quality.

However, Yarn quality is being affected by a number of defects which exist in the yarn after the manufacturing process (spinning). These defects may be as a result of drafting irregularities and immature fibers in the raw material. These defects cause yarn breakages during post spinning operations and cause up to 35% loss of the income generated from fabric. Therefore, it is necessary to reduce the defects to a minimum level possible.

A number of methods are available for measuring yarn evenness and these include;

Visual examination method, where the yarn is wound onto the black and a human being compares the blackboard against ASTM spun yarn standard photographs (Grade A, Grade B, Grade C, Grade D and Grade E). However, the results of this method are subjective in nature.

Gravimetric method (cutting and weighing method).

Electronic capacitance method (USTER Tester 3 or 4), whereby the yarn is passed through a parallel condenser in a continuous fashion and the change of capacitance is monitored electronically, however, this method is associated with inaccuracy of results due to damping of yarn surface hairs, high purchase cost and does not consider variations in relative humidity.

On addition to the defects of yarn, Hairiness is also a booming parameter for yarn quality evaluation. **Hairiness** refers to the degree to which a yarn has fibres or 'hairs' protruding from its main body. It occurs because some fibre ends protrude from the yarn body, some looped fibres arch out from the yarn core and some wild

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