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FACULTY OF ENGINEERING

DEPARTMENT OF TEXTILE AND GINNING ENGINEERING

INFORMATIVE EXPERT SYSTEM FOR KNITTED FABRIC FAULTS ON ANDROID OPERATING SYSTEM.

BY

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DECLARATION

I, Asiku Geofrey declare that the work in this report is original except where indicated by special references in the text and no part of this report has been submitted to any other university for examination or degree award. Any view expressed in the report are those of the author and in no way represents those of Busitema University.

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May the ALMIGHTY GOD bless the works of their hands

Thanks.

LIST OF ACRONYMNS

.apk Android Package

XML Extensible Markup Language

API Android Programing Interface

JDK Java development kit.

API Application Programming Interface

OS Operating System

JESS Java Expert System Shell

ABSTRACT

Knitting is the process where a continuous length of yarn/thread is converted into intermeshed loops either by hand or by machine to form a cloth. The process is not 100% effective, defects normally occur which spoils the clean & uniform appearance of the fabric. As a quality control measure, an effective monitoring is achieved by online or offline inspection.

For offline inspection, quality tools Such as Pareto chart; Flow chart; Cause and Effect Diagram; Scatter Diagram; and Control Charts, have been used to boost quality by experts.

Therefore, Human experts for knitted fabric inspection remain an important way to classify and diagnose the faults. The fault tolerance level fixed by each expert in some cases is subjective because it is often based only on the level of expertise and not on fault size and gravity. Even though, the defects are detected, the trail to find the causes is done by experts who are virtually unrealistic if not expensive. If there was a way to make an error free informative expertise available to all inspectors in time of immediate need, then production and quality would be boosted.

This research aims at developing a mobile application that adresses the above problem by availing images of related faults, causes and solution of various knit fabric faults on android mobile platform.

The work is arranged in four chapters, Chapter one includes the introduction of a mobile based informative expert system on android mobile platform. Chapter two discusses the literature related to the system, Chapter three illustrates the methodologies used in coming up with the working application of the system, Chapter four includes results and discusion of the system design and analysis, and chapter five contains the summary of the work, discussions and recommendations.

A complete and finished application plus all files used during construction of this project application are burned (stored) onto a CD attached with this report book for further reference.

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CHAPTER ONE

1 INTRODUCTION

1.1 BACKGROUND

Clothing is one of our basic needs in life which are made by majorly weaving or knitting [1]. Knitting is the second most important technique of manufacturing clothing materials [2].

During the knitting process, a continuous length of yarn/thread is converted into vertically intermeshed loops either by hand or by machine. The produced cloth is then dyed and finished before a garment is produced from it [2]. The processing of knitted fabrics is not 100% effective, defects/faults normally occurs which spoils the clean & uniform appearance of the fabric & affects the performance parameters like its dimensional stability [3].

As a quality control measure, an effective monitoring is achieved by automatic or manual inspection. Its function is to avoid or detect the fabric faults as well as to locate the defect and its causes as soon as possible in attempts to solve them to cut down the undesirable return of goods and avoiding losses in productivity and quality.

New generation knitting machines are conceived with auxiliary equipment that ensure less fabric faults during knitting such as filter creel, lint removal, thread survey, precise oiling and fabric faults detector devices. Nevertheless, some fabric faults are not detectable with these equipment and fabric has to be inspected by visual examination or review of raw materials, partially finished components of the garments and completely finished garments in relation to some standards specifications, or requirements, as well as measuring the garments to check if they meet the required measurements after knitting.

The principle involved in inspection is the early detection of defects, feedback of this information to appropriate people, and determination of the cause, ultimately resulting in the correction of the problem. The main objective of inspection is the detection of defects and non-conformances as early as possible in the manufacturing process so that time and money are not wasted later on in either correcting the defect or writing off defective garments. For inspection to be effective, the entire inspection loop as shown in Fig. 1 must be completed [4].

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APPENDIX

Appendix 1. Java code for the categories of faults.

```
import android.content.Intent;
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.support.v7.widget.Toolbar;
import android.view.View;
import android.view.Menu;
import android.view.MenuItem;
import android.widget.RelativeLayout;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Toolbar toolbar = (Toolbar) findViewById(R.id.toolbar);
        setSupportActionBar(toolbar);

        //Home buttons
        RelativeLayout btnYarn = (RelativeLayout) findViewById(R.id.btnYarn);
        RelativeLayout btnKnittingElement = (RelativeLayout)
findViewById(R.id.btnKnittingElement);
        RelativeLayout btnMachineSetting = (RelativeLayout)
findViewById(R.id.btnMachineSetting);
        RelativeLayout btnDyeing = (RelativeLayout)
findViewById(R.id.btnDyeing);
        RelativeLayout btnFinishing = (RelativeLayout)
findViewById(R.id.btnFinishing);

        if (btnYarn != null) {
            btnYarn.setOnClickListener(new View.OnClickListener() {
                @Override
                public void onClick(View v) {
                    startActivity(new Intent(MainActivity.this,
YarnDefects.class));
                }
            });
        }

        if (btnKnittingElement != null) {
            btnKnittingElement.setOnClickListener(new View.OnClickListener()
{
                @Override
                public void onClick(View v) {
                    startActivity(new Intent(MainActivity.this,
KnttingElementsDefects.class));
                }
            });
        }

        if (btnMachineSetting != null) {
```