
FACULTY OF ENGINEERING

DEPARTMENT OF TEXTILE AND GINNING

**MODELLING THE BREAKING STRENGTH OF PC BLENDS ROTOR
SPUN YARN**

BY

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**A FINAL YEAR PROJECT REPORT SUBMITTED IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF
BACHELOR OF SCIENCE IN TEXTILE ENGINEERING DEGREE OF
BUSITEMA UNIVERSITY 2018**

FINAL YEAR PROJECT REPORT FOR NASSANGA AISHA

DECLARATION

I NASSANGA AISHA Reg. No BU/UG/2014/99 hereby declare that this project is my original work and that the information contained in this project is out of my hard work and research, 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..... 10th / 7 / 2018'



APPROVAL

This is to certify that the proposal under the title "*modeling the breaking strength of PC blend rotor spun yarn*" has been proposed under my supervision and is now ready for examination.

Supervisors;

Name: Dr .NIBIKORA Ildephonse

Signature:

Date:

Name: Mr. KASEDDE Allan

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Date:

ACKNOWLEDGEMENT

I would love to extend my gratitude to a number of people who have managed to contribute towards my education.

I would like to thank the almighty God for giving me the strength to do this project .i recognize the support from the entire textile department.

I also acknowledge the love and care of my family and loved ones, for all the financial, moral, Spiritual, and physical support.

DEDICATION

I dedicate this project to my family in particular my lovely son and husband who have been there for me in the times when I needed them most along with my lovely parents who have supported me since the journey began, my head of department who has been so supportive in the accomplishment of this project.

ABSTRACT

In this study, SVM as a new intelligent methodology was applied to obtain a predictive model of strength of polyester cotton rotor spun yarns based on three main parameters; the rotor speed, the count and blend ratio. And linear regression model was also used in my study as a criterion to evaluate the predictive power of the SVM algorithm.

Obtained results from the tests of the study indicated a powerful performance of the linear regression programming algorithm in predicting the strength of rotor spun yarns with the R² values of the SVM model and linear regression model were 27.74% and 99.97% respectively. Other relations are showed in the table III. The 27.74% value of R² of the SYM shows a very weak relationship between the actual and predicted values as it is less than 50% and hence conclusively, the SVM model for predicting yarn strength was modelled.

Table of contents	i
DECLARATION	i
APPROVAL	ii
ACKNOWLEDGEMENT	iii
DEDICATION	iv
Table of contents	v
list Of Figures	vi
LIST OF TABLE	vii
List of synonyms	viii
1.0 CHAPTER ONE	1
1.1 Introduction	1
1.11 Rotor spinning	1
1.12 Pc blends	3
• Fibre Blending	3
1.13 Yarn breaking strength	4
1.2 Problem statement	5
1.3 Objectives	5
1.31 Main objective	5
1.32 Specific objectives	5
1.4 Justification	5
1.5 Scope	5
2.0 CHAPTER TWO	6
2.1 Literature review	6
2.11 DTREG	6
2.12 SVM (SUPPORT VECTOR MACHINES)	6
3.0 CHAPTER THREE	16
3.1 Methodology	16
3.11 materials and methods	16
3.12 Validation or testing data	18
4.0 RESULTS AND DISCUSSION	19
4.1 Prediction performance and model validation	19
CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS	22
5.1 conclusions	22
5.2 Recommendation	22

list Of Figures

Figure 1; rotor spinning principle 3

Figure 2; SVM Algorithm 7

Figure 3; A two dimensional example 7

Figure 4; data separation in a 2-D 8

Figure 5 9

Figure 6; When lines go crooked 9

Figure 7; separation in higher dimensional 10

Figure 8; Complex boundary data 10

Figure 9; Linear kernel function 11

Figure 10; Polynomial kernel function 11

Figure 11; Line separation in polynomial kernel functions 12

Figure 12; Radial basis function 12

Figure 13; RBF Mapping 13

Figure 14; SVM RBF kernels use RBF nodes centered on the support vectors 13

Figure 15; Sigmoid kernel function 14

Figure 16; A plot of the actual strength values 20

Figure 17; a plot of the SVM predicted values 20

Figure 18; actual Vs SVM 21

Figure 19; Predicted Vs. Actual strength-linear regression 21

LIST OF TABLE

Table 1; specification of parameters of the rotor spun yarns	16
Table 2; showing the average values of predicted strength of the produced yarn.....	18

List of synonyms

SVM-Support Vector Machines

PC-PolyesterCotton

MODELLING THE BREAKING STRENGTH OF PC BLENDS ROTOR SPUN YARN

1.0 CHAPTER ONE

1.1 Introduction

1.1.1 Rotor spinning

Among the range of open-end spinning technologies, rotor spinning is commercially more widely used because a wider range of yarn counts can be spun with appropriate yarn properties. Since its commercial introduction in 1969, rotor spinning has developed continuously. Rotor speeds have increased from around 30,000 rpm to over 150,000 rpm. Rotor spinning was initially developed with two main objectives:

1. To provide a more economical spinning system than conventional ring spinning through higher productivity
2. To produce yarn of a quality that matches or surpasses that of conventional ring spinning

The first objective has been accomplished. Today, rotor spinning has a production rate exceeding 200 m/min, as compared to a maximum of about 40 m/min in ring spinning. Rotor spinning eliminates the need for roving, since rotor yarns can be spun directly from drawn sliver. Unlike in a ring frame, the winding and twisting functions are separate and this permits the building of large yarn packages. Both these characteristics allow much high levels of productivity than with ring spinning. The second objective has not yet been achieved because of the structure of rotor yarns, which also limits the fineness of count that can be spun. Perhaps the biggest current obstacle facing rotor spinning is the fact that it is limited to coarse and medium yarn counts (16tex to 120tex) while ring spinning excels in the medium to fine counts (finer than 16tex).

The rotor spinning machine is unlike any other machine in the short staple spinning mill in the range of tasks it has to perform, namely all the basic operations:

- **Sliver feed:** A card or drawframe sliver is fed through a sliver guide via a feed roller and feed table to a rapidly rotating opening roller.
- **Sliver opening:** The rotating teeth of the opening roller comb out the individual fibers from the sliver clamped between feed table and feed roller. After leaving the rotating opening roller, the fibers are fed to the fiber channel.
- **Fiber transport to the rotor:** Centrifugal forces and a vacuum in the rotor housing cause the fibers to disengage at a certain point from the opening roller and to move via the fiber channel to the inside wall of the rotor.

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