SALES DATA FORECASTING FOR PREDICTING THE BUSINESS PERFORMANCE

A PROJECT REPORT

Submitted by

S.MUTHUKRISHNAN 810014205064

R.YUVARAJ 810014205111

in partial fulfillment for the award of the degree

of

BACHELOR OF TECHNOLOGY

IN

INFORMATION TECHNOLOGY

UNIVERSITY COLLEGE OF ENGINEERING

BIT CAMPUS, TIRUCHIRAPPALLI

ANNA UNIVERSITY:: CHENNAI 600 025.

APRIL 2018

UNIVERSITY COLLEGE OF ENGINEERING,

BIT CAMPUS,

TIRUCHIRAPPALLI-620 024

BONAFIDE CERTIFICATE

Certified that this project report titled **"SALES DATA FORECASTING FOR PREDICTING THE BUSINESS PERFORMANCE"**, is a bonafide work of **S.MUTHUKRISHNAN (810014205064)** and **R.YUVARAJ (810014205111),** who carried out the work under my supervision.

SIGNATURE
Mr.D.VENKATESAN
HEAD OF THE DEPARTMENT
Department of Information Technology,
University College of Engineering,
BIT Campus,
Anna University: : Regional Center,
Tiruchirappalli – 620 024.

SIGNATURE
Dr.D.ASIR ANTONY GNANA SINGH
TEACHING FELLOW
Department of Computer science & engineering,
University College of Engineering,
BIT Campus,
Anna University : : Regional Center,
Tiruchirappalli – 620 024.

Submitted for the VIVA-VOCE to be held on:

INTERNAL EXAMINER EXTERNAL EXAMINER

DECLARATION

We hereby declare that the work, entitled "**SALES DATA FORECASTING FOR PREDICTING THE BUSINESS PERFORMANCE**" is submitted in partial fulfillment of the requirement for the award of degree in "**Bachelor of Technology**" ,University College of Engineering , BIT Campus, Anna University :: Regional Center ,Tiruchirappalli ,is record of our own work carried out by us during the academic year 2017 - 2018 under the supervision and guidance of **Dr.D. ASIR ANTONY GNANA SINGH,** Teaching Fellow, Department of Computer Science & Engineering, University College of Engineering , BIT Campus, Anna University :: Regional Center ,Tiruchirappalli. The extent and source of information are derived from the existing literature and have been indicated through the dissertation at the appropriate places. The matter embodied in this work is original and has not been submitted for the award of any degree, either in this or any other university.

Signature of the Candidates

MUTHUKRISHNAN S (810014205064)

YUVARAJ R (810014205111)

I certify that the declaration made above by the candidates is true.

Signature of the Guide,

Dr.D. ASIR ANTONY GNANA SINGH,

ASSISTANT PROFESSOR,

Department of Computer Science
& Engineering,
University College of Engineering,
BIT Campus,
Anna University: : Regional Center,
Tiruchirappalli – 620 024.

ACKNOWLEDGEMENT

We would like to thank our honorable Dean **Dr.T.SENTHIL KUMAR**, Professor for having provided us with all required facilities to complete our project without hurdles.

We would also like to express our sincere thanks to **Mr.D.VENKATESAN**, Head of the Department of Computer Science and Engineering, for his valuable guidance, suggestions and constant encouragement paved way for the successful completion of this project work.

We would like to thank our Project Coordinator **Mrs. P. JANANI**, Teaching Fellow, Department of Information Technology for her kind support.

We would like to thank and express our deep sense of gratitude to our project guide **Dr.D.ASIR ANTONY GNANA SINGH**, Teaching Fellow, Department of Computer Science & Engineering, for his valuable guidance throughout the project. We also extend our thanks to all other teaching and non-teaching staff for their encouragement and support.

We thank our beloved parents and friends for their full support in the moral development of this project.

TABLE OF CONTENT

CHAPTER	TITLE	PAGE NO
	ABSTRACT	**Vii**
	LIST OF FIGURES	**Viii**
	LIST OF ABBREVIATION	**ix**
1	**INTRODUCTION**	**01**
	1.1 OVERVIEW OF PROJECT	**01**
	1.2 FORECASTING IN BUSSINESS	**01**
	1.3 TYPES OF FORECASTING	**02**
2	**LITERATURE SURVEY**	**04**
3	**METHODOLOGY**	**12**
	3.1 GAUSSIAN PROCESSES	**12**
	3.1.1 NOISE CALCULATION	**13**
	3.2 LINEAR REGRESSION	**14**
	3.3 SEQUENTIAL MINIMAL OPTIMIZATION (SMO)	**16**
	3.4 MULTILINEAR PERCEPTRON	**18**
4	PROPOSED METHOD	**20**
	4.1 DATASETS	**20**
	4.2 Architecture	**20**
	4.3 FLOW CHART	**21**
	4.4 Algorithm	**22**
5	**SYSTEM SPECIFICATION**	**25**
	5.1 HARDWARE REQUIREMENTS	**25**
	5.2 SOFTWARE REQUIREMENTS	**25**
6	**EXPERIMENTAL SETUP**	**26**

	6.1 WEKA TOOL	**26**
	6.2 JAVA	**27**
	6.3 NETBEANS	**27**
7	**RESULT AND DISCUSSION**	**29**
8	**CONCLUSION**	**45**
9	**REFERENCES**	**46**

ABSTRACT

Business plays a vital role in day-to-day life to bring the goods and services to the people. The profit of a business highly depends on the sales. Forecasting the sales in business is essential since the sales forecast predicts the business performance. Moreover, sales forecasting is an estimation of future sales in a business based on the past sales data. This forecasting to make better managerial decisions allows in business for improving the performance of the business. Furthermore, the sales forecasting helps to increase the revenue, reduce the operating cost, improve the working capital use, and increase the shareholder's values. Business means all the internal and external factors to how the company to perform various function in the particular environment. The company should have the capability to meet the customer satisfaction including the employees, and the management. So forecasting help us to predict the business performance by forecasting the business trends. Forecasting allow us to make a good decision in a complex situation. This project presents predicting business trends using time series analysis tool to improve the profit of a company by changing the business activities based on the sales data.

LIST OF FIGURES

FIGURE NO	TITLE	PAGE NO
4.2	Architecture of sales data forecasting	22
7.1	Mean absolute error	29
7.2	Root relative squared error	30
7.3	Direction accuracy	31
7.4	Relative absolute error	32
7.5	Mean absolute percentage error	33
7.6	Root mean squared error	34
7.7	Mean squared error	35
7.8	Mean absolute error	36
7.9	Root relative squared error	37
7.10	Direction accuracy	38
7.11	Relative absolute error	39
7.13	Root mean squared error	40
7.14	Mean squared error	41

LIST OF ABBREVATIONS

SVM –SUPORT VECTOR MACHINE

MLP –MULTILINEAR PERCEPTRON

SMO –SEQUENTIAL MINIMAL OPTIMIZATION

JVM –JAVA VIRTUAL MACHINE