

Universiti Teknologi MARA

**Mathematical Model of Air Quality Index (AQI) in
Peninsular Malaysia using Support Vector Machine
(SVM)**

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STUDENT'S DECLARATION

I certify that this report and the research to which it refers are the product of my own work and that any ideas or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the discipline.

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ABSTRACT

The presence of poisonous gases in the air is called air pollution. Malaysia is one of the developing countries strives towards development and industrialization. Air pollution is becoming a major environmental issue in Malaysia due to the increasing number of vehicles, open burning, release of chemical toxics from factories. All these air pollutants have a big impact on human health as it is reflected in the increase of hospital admissions particularly the respiratory, cardiovascular diseases and also to the surrounding environment. This study focused on the formulation of Cumulative Index (CI), comparative analysis of the proposed CI with the existing Air Quality Index (AQI) and classify the classes of CI. Monthly data of five air quality parameters which are Carbon dioxide (CO), Ozone (O₃), Sulfur dioxide (SO₂), Nitrogen dioxide (NO₂), and Particular Matter less than 10 microns (PM₁₀) in 37 monitoring stations for four years from 2013 to 2016 were gathered from Department of Environment (DOE). Microsoft Office Excel was used to run the AQI and CI. Thus, the Support Vector Machines (SVM) is proposed to classify CI. Classification classes are divided into two types which are good and harmful. This classification classes were derived from the helped by Rattle with R. The Radial Bias Function (RBF) is more accurate compared to Linear Function in order to classify the accuracy of the CI data. In a nutshell, from the research the classifier performs well to classify the quality of air. Hence, it can help the government sector to calculate the Cumulative Index by using a mathematical model.

TABLE OF CONTENTS

CONTENTS	PAGE
SUPERVISOR'S APPROVAL	ii
STUDENT'S DECLARATION	iii
ACKNOWLEDGEMENT	iv
ABSTRACT	v
TABLE OF CONTENTS	vi
LIST OF FIGURES	ix
LIST OF TABLES	x
LIST OF ABBREVIATIONS	xi
CHAPTER ONE: INTRODUCTION	
1.1 Background of the Study	1
1.2 Problem Statement	2
1.3 Objectives of the Study	3
1.4 Scope of the Study	3
1.5 Significance of the Study	4
CHAPTER TWO: LITERATURE REVIEW	
2.1 Support Vector Machine	5
2.2 The Sources of Air Pollution	6
2.3 The Effects of Air Pollution	7
2.4 Methods to Forecast Air Quality Index	8
2.5 Air Quality Index	9

2.6	Study in Malaysia about Air Pollution	10
2.7	Summary	10

CHAPTER THREE: RESEARCH METHODOLOGY

3.1	Method of Data Collection	11
3.2	Method of Data Analysis	12
3.2.1	Calculating Air Quality Index	12
3.2.2	Calculating Cumulative Index	13
3.2.3	Classification of CI using Support Vector Machine	17
3.3	Flowchart of the study	20

CHAPTER FOUR: RESULTS AND DISCUSSIONS

4.1	Results of Cumulative Index based on Years	21
4.2	Results of Mean and Standard Deviation Based on Pollutants	22
4.3	Results of Air Quality Index (AQI) based on Pollutants	23
4.4	Results of CI and SVM Classification based on Selected States	25

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

5.1	Conclusions	27
5.2	Recommendations	28

REFERENCES	29
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