

Universiti Teknologi MARA

**Prediction System For Determination of
Hypertension Risk Using Artificial Neural
Network**

Nur Izzati Bt Zulkifli

Thesis submitted in fulfillment of the requirements for
Bachelor of Computer Science (Hons)
Faculty of Computer & Mathematics Science

July 2012

DECLARATION

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.

JULY 15, 2012

NUR IZZATI BINTI ZULKIFLI

2010417928

ABSTRACT

There are a lot of techniques that can be used to make predictions, but the technique which is suitable to be used to make this prediction is Artificial Neural Network system. Back-propagation is one of the feed-forward techniques that can be used when we know what the output that will carry out after the data keyed in. this problem also occurs in adolescents and children. Many who know this disease is caused by the existing symptoms such as severe headaches, nose bleeds, blurred vision, palpitations and stress. The objective of the research, firstly, to understand about determination the hypertension risk using Artificial Neural Network, secondly, to propose prediction model of Hypertension risk using Artificial Neural Network engine. Lastly, to test and evaluate new data Hypertension's Patient using prediction model. The Prediction used in Neural Network technique is whereby some of the data about the parameter of Hypertension like age, BMI level, Blood Pressure(Systolic and Diastolic), Smoking Habit and Family History to see whether the persons have hypertension or not. As a result of this project, the system is user friendly and easy to use especially the doctor to check their patient have hypertension or not before get treatment or other people to check their hypertension disease.

TABLE OF CONTENTS	PAGE
DECLARATION	i
ACKNOWLEDGMENT	ii
ABSTRACT	iii
APPROVAL	iv
TABLE OF CONTENT	v-vi
LIST OF FIGURES	viii
LIST OF TABLES	ix

CHAPTER 1 : INTRODUCTION

1.1 Research Background	1-2
1.2 Problem Statement	2-3
1.3 Objective of Research	3
1.4 Scope of Research	4
1.5 Significance of Research	4-5
1.6 Summary	5-6

CHAPTER 2 : LITERATURE REVIEW

2.1 Hypertension	7
2.1.1 Introduction	8
2.1.2 Definition of Hypertension	8-9
2.1.3 Causes of Hypertension	9
2.1.4 Symptoms and Signs of Hypertension	10
2.1.5 Diagnosis and Treatment of Hypertension	11
2.2 Proposed Technique to be used (Artificial Intelligence System)	12

2.2.1	Artificial Neural Network	13-16
2.2.1.1	Back-Propagation	16-21
2.3	Related Study Using Artificial Neural Network	21
2.3.1	Case Study 1	21
2.3.2	Case Study 2	22
2.3.3	Case Study 3	23-24
2.4	Summary	25

CHAPTER 3: RESEARCH APPROACH AND METHODOLOGY

3.1	Introduction	25
3.2	Research Framework	26-28
3.2.1	Theoretical Study	29-30
3.2.2	Development Back-Propagation Neural Network Engine	31-32
3.2.2.1	Data Pre-processing	32-35
3.2.2.2	System Design	36
3.2.2.3	Software and Hardware	
	3.2.2.3.1 Hardware Specification	36
	3.2.2.3.2 Software Specification	36
3.3	Testing and Evaluation	37
3.4	Documentation	37
3.5	Summary	37

CHAPTER 4: RESULT AND FINDING

4.1	Features Of The Prototype	38-40
4.2	Architecture Design	41