UNIVERSITI TEKNOLOGI MARA

COMFORT SHOE FOR LADIES USING NEURO FUZZY TECHNIQUE

NORMALA BT CHE EEMBI @ JAMIL

IT Project submitted in fulfillment of the requirements for the degree of

Master of Science (Information Technology)

Faculty of Computer and Mathematical Sciences

July 2013

ABSTRACT

Shoe is a very important thing to every single person in the world. Everyone use or wear a shoe to protect their feet from pain. In order to protect feet, they must wear a comfort shoe and it's hard to find a comfort shoe for them that based on individual needs especially among ladies or woman that are very interested on wearing a comfort and beautiful shoe. A few characteristics of a shoe must be determined to get high level of comfort for a user to protect their feet while walking or do daily life activities and to avoid from pain. This is why a comfort shoe is important in woman life. The objectives of this project are to identify comfort features that can be adapted in ladies shoes and to recommend comfortable ladies shoes using neuro fuzzy expert. The research methodology requires gathering relevant data from research question, interview, carrying out a literature review, and reading and surfing research from internet, data prepossessing, develop prototype, training the data, testing the data and documentation. The kind of this research will determine that shoes are comfort for ladies. The result will enable shoe makers to have a guide to make a shoe that is comfortable for ladies when they wear formal type shoes. For ladies it will provide them a clue of the kind of shoes that make them feel confident and easy when walking either at office or other places. Meanwhile, designer will have a clue to design a better product using appropriate materials and appropriate forms.

ACKNOWLEDGEMENT

Assalamualaikum w.b.t

Alhamduhllah and praise to Allah, the one and only, for giving me strength to complete my project paper to fulfill requirements of the IT Project (SYS 798) course. Here, I would like to express my sincere to every single person that contributed or involved directly or indirectly to help me either with their effort or support in order to complete all the process of the research and development activities.

The first person that I must give a lot of thanks to my supervisor Assoc. Prof. Dr Anitawati Mohd Lokman, that was always give a full cooperation and never stop to guide and help me complete this thesis processes until the end of this project.

A lot of thanks to my expert Pn Suliza Bt Ahmad, shoe designer boutique from EDZ eightDesigns at Bangi for the cooperation to give me more advices, suggestions and guidelines about my project paper.

I also would like to thank all participants who took part in this study. Without the generous help of many people, it would have been very difficult for me to complete this project. I thank them all.

Normala Bt Che Eembi @ Jamil

July 22, 2013 Faculty of Computer Science and Mathematics Universiti Teknologi MARA

TABLE OF CONTENTS

STUDENT'S DECLARATION	i
ABSTRACT	ii
ACKNOWLEDGEMENT	iii
TABLE OF CONTENTS	iv
LIST OF TABLES	vii
LIST OF FIGURES	viii

CHAPTER ONE: INTRODUCTION

Research Background					1
Problem Statement					2
Aim	of		Project		2
Question	of	the		Project	2
Project Objectives					2
Project Scope					3
Project Significance					3
Research Design					4
Conclusion					5
	Research Background Problem Statement Aim Question Project Objectives Project Scope Project Significance Research Design Conclusion	Problem Statement Aim of Question of Project Objectives Project Scope Project Significance Research Design	Problem Statement Aim of Question of the Project Objectives Project Scope Project Significance Research Design	Problem Statement Aim of Project Question of the Project Objectives Project Scope Project Significance Research Design	Problem Statement Aim of Project Question of the Project Project Objectives Project Scope Project Significance Research Design

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction	6
2.2 Formal Ladies Shoe	6
2.3 Comfort Shoe	8
2.4 Artificial Intelligent Technique	9
2.4.1 Neuro Fuzzy	9
2.4.2 Fuzzy Logic	9
2.4.3 Artificial Neural Network	15

2.4.4 Back-Propagation Neural Network	16
2.7 Existing System and Previous Research	17
2.7.1 Application of an adaptive Neural Fuzzy Inference System	
to thermal comfort and group technology problem.	18
2.7.1.1 Application of Neural Fuzzy Inference technique	
to thermal comfort	18
2.7.1.2 Thermal comfort measure	19
2.7.2 Hybrid Models to Predict Clothing Sensory Comfort from	
Fabric Physical Properties	21
2.8 Conclusion	24

CHAPTER THREE: METHODOLOGY

3.1 Introduction	25
3.2 Preliminary Study	25
3.3 Knowledge Acquisition	26
3.3.1 Reading and Interview	26
3.4 Data Collection	27
3.4.1 Questionnaire	28
3.5 Design System Architecture	28
3.5.1 Design Fuzzy Inference Engine	30
3.5.1.1 Define Linguistic Variable	30
3.5.1.2 Determine Fuzzy Set	31
3.5.1.3 Fuzzification	31
3.5.1.4 Construct Rule	33
3.5.1.5 Aggregation	34
3.5.1.6 Defuzzification	35
3.5.2 Design Neural Network Engine	36
3.5.2.1 Back Propagation Technique	36
3.5.2.2 Design Interface	41
3.6 Data Pre-processing	42