UNIVERSITI TEKNOLOGI MARA

AFFECTIVE ASSESSMENT IN LEARNING USING FUZZY LOGIC

LUSIANA BINTI SYAIFUL

Dissertation submitted in partial fulfillment
of the requirements for the degree of
Master of Computer Science

Faculty of Computer and Mathematical Sciences

January 2016

ABSTRACT

Affective assessment is getting attention in education as it relates towards students' emotion in learning. Studies also showed that emotions play a vital role for students during learning sessions. Currently, there is no specific mechanism to access the affective value during the computer based learning environment. This research presents the work done in order to assess the affective value of the learner during computer-based learning. Using questionnaire of personal preferences was found feasible to be used in recognizing emotion. A framework for developing fuzzy logic in measuring emotion was proposed. An affective assessment with Object Oriented Programming subject was developed as the test instrument for the framework. Participants were required to answer set of assessment with preference questions. The actual result from the research is then compared with expected result of emotions from participant to test the accuracy. The results then produce the state of emotions and its percentage. Based on the results, it is recommended that the framework to be used in measuring emotions implement Fuzzy Logic with Fuzzy Expert System techniques.

ACKNOWLEDGEMENT

Assalamualaikum w.b.t.

In the name of Allah, Most Gracious, Most Merciful All praise and thanks due to Allah, and peace and blessings be upon His Messenger. I would like to take this opportunity to express my appreciation to all people that involved directly or indirectly in contributing their help, effort and support through all processes to finish this research.

First of all, I would like to express my deepest gratitude to my beloved supervisor, Dr. Marina binti Ismail because she is the person that always supervising and monitoring all my works since the last semester until the end of this semester. She's also gives me a lot of advice, guidance, cooperation and ideas to make my research be the best among the best.

Besides that, I would like to thank Pn. Masrina Abdul Halim from Psychology Officer of FSKM, UiTM Shah Alam as my domain expert for my research upon her knowledge and all her contributions to succeed my research. In the same time, I would like to thank my beloved parents for their fully support and encouragement in finishing my research. Thanks for being understanding throughout my life.

Last but not least, my sincere appreciation also goes to all my dearest friends and lecturers in Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA (UiTM) and also those whose directly and indirectly involved and contributed in this research.

Thank you.

TABLE OF CONTENTS

		Page
AUTHOR'S DECLARATION		**ii**
ABSTRACT		**iii**
ACKNOWLEDGEMENT		**iv**
TABLE OF CONTENTS		**v**
LIST OF TABLES		**viii**
LIST OF FIGURES		**ix**
LIST OF ABBREVIATIONS		**xii**
CHAPTER ONE: INTRODUCTION		**1**
1.1	RESEARCH BACKGROUND	1
1.2	PROBLEM STATEMENT	2
1.3	RESEARCH OBJECTIVES	3
1.4	RESEARCH QUESTION	3
1.5	RESEARCH SCOPE	4
1.6	RESEARCH SIGNIFICANCE	4
1.7	SUMMARY	5
1.8	OUTLINE OF THE PROJECT	6

CHAPTER TWO: LITERATURE REVIEW 7

2.1 INTRODUCTION TO EMOTIONS 7

2.2 INTRODUCTION TO PREDICTION TECHNIQUE USING INTELLIGENT SYSTEM 15

2.3 RELATED STUDY IN MEASURING EMOTIONS 26

2.4 SUMMARY 30

CHAPTER THREE: RESEARCH METHODOLOGY 31

3.1 INTRODUCTION 31

3.2 RESEARCH METHODOLOGY 31

3.3 HARDWARE AND SOFTWARE SPECIFICATION 47

3.4 SUMMARY 49

CHAPTER FOUR: ANALYSIS AND RESULT 50

4.1 FRAMEWORK FOR DEVELOPING FUZZY LOGIC IN MEASURING EMOTIONS 50

4.2 DESIGN AND IMPLEMENT THE FES TO MEASURE EMOTION IN LEARNING 54

4.3 EVALUATE THE ACCURACY OF THE PROTOTYPE 74

4.4 FINDINGS 78

4.5 DISCUSSION 82

4.6 SUMMARY 82