

**Universiti Teknologi MARA**

**Programming Learning Style  
Recommendation Using Fuzzy Logic**

**Nur Fadhilah Ain Binti Susen**

**Thesis submitted in fulfilment of the requirements for  
Bachelor of Computer Science (Hons.)  
Faculty of Computer and Mathematical Sciences**

**January 2017**

## **ACKNOWLEDGEMENT**

Alhamdulillah, praises and thanks to Allah because of His Almighty and His utmost blessings, I was able to finish this research within the time duration given. Firstly, my special thanks goes to my supervisor, Nik Marsyahariani Nik Daud. Special appreciation also goes to my beloved parents Susen Bin Lan and Hamsidah Binti Amat Pakeh. Last but not least, I would like to give my gratitude to my dearest friends Nurul Syakirah Binti Suliman, Nur Syahirah Binti Rahim and Siti Farah Najwa Binti Mukhlis.

## ABSTRACT

Programming subjects are fundamental to Computer Science students as students need to comprehend these subjects in order to be a good computer scientist. It is also one of the important and core subject for Computer Science students. Programming subject also complex to implement if students do not have any basic. This may cause the understanding about programming become hard and difficult. While, techniques of study for each person are different based on their personality. To solve the problem a recommendation system using fuzzy logic is proposed on Myers-Briggs Type Indicator (MBTI). MBTI model is a personality test used to suggest study techniques that suitable for student so they can learn programming subjects more effectively. Methodology used consists of collection of data about programming and MBTI, design the interface, process of implementation and evaluation of the prototype. A conceptual framework is developed based on fuzzy logic system technique and Myers-Briggs Type Indicator (MBTI). MBTI result will be used as a feeder to fuzzy logic engine. The prototype can help students to choose appropriate learning style for programming. The prototype is evaluated using accuracy testing which is measure the accurate value of the exactly output. The result testing for this prototype is 36.36%. For the future works combination of the other model of learning style and techniques of programming will be added to improve the accuracy of the result.

## TABLE OF CONTENTS

<b>CONTENTS</b>	<b>PAGE</b>
<b>SUPERVISOR APPROVAL</b>	<b>ii</b>
<b>STUDENT DECLARATION</b>	<b>iii</b>
<b>ACKNOWLEDGEMENT</b>	<b>iv</b>
<b>ABSTRACT</b>	<b>v</b>
<b>TABLE OF CONTENTS</b>	<b>vi</b>
<b>LIST OF FIGURES</b>	<b>ix</b>
<b>LIST OF TABLES</b>	<b>x</b>
<b>CHAPTER ONE: INTRODUCTION</b>	
1.1 Background of Study	1
1.2 Problem Statement	2
1.3 Project Objective	3
1.4 Project Scope	3
1.5 Project Significance	3
1.6 Project Methodology Framework	4
1.7 Summary	5
<b>CHAPTER TWO: LITERATURE REVIEW</b>	
2.1 Learning Styles Based on Personality Test	6
2.1.2 Myers-Briggs Type Indicator (MBTI)	8
2.2 Programming Learning Subjects	9
2.3 Soft Computing	10
2.3.1 Fuzzy Logic	11
2.4 Related Works	15

2.4.1 Related Work in Recommendation System	15
2.4.2 Related Works in Fuzzy Logic in Recommendation System	18
2.5 Summary	19
<b>CHAPTER THREE: RESEARCH METHODOLOGY</b>	
3.1 Introduction	21
3.2 Project Overview	22
3.3 Research Analysis	25
3.3.1 Preliminary Study	25
3.3.2 Data Preparation	26
3.4 Research Design	28
3.4 Project Evaluation	30
3.5 Hardware and Software	30
3.6 Project Formulation Time	31
3.7 Summary	32
<b>CHAPTER FOUR: RESULT AND DISCUSSION</b>	
4.1 Project Conceptual Framework	33
4.2 Data Description for Representation	34
4.2.1 Data Preprocessing Result	34
4.2.2 Data Representation	35
4.3 Implementation Result	37
4.3.1 Fuzzification	38
4.3.2 Rule Evaluation	39
4.3.3 Fuzzy Inference Engine	40
4.3.4 Defuzzification	41
4.4 Result Evaluation	41
4.4.1 Evaluation Analysis	43
4.5 Summary	43