

Universiti Teknologi MARA

**Student Career Recommendation using
Content-Based Filtering Method**

Adib Hakimi Bin Abdul Rashid

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

JANUARY 2022

STUDENT DECLARATION

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

.....

ADIB HAKIMI BIN ABDUL RASHID

2020979159

JANUARY 27, 2022

ABSTRACT

Finding a suitable career is the most prevalent challenge that students confront following graduation. For students who do not know what they want to be after graduating, career seeking may be a difficult experience. The main aim of this project is to develop a career recommendation system that focuses solely on computer science, specifically for UiTM Tapah's CS230 students. The system's career data was scraped from the Jobstreet website using the web scraping technique. A content-based filtering method is used to make the recommendation, which filters one item to another that is similar to the user's preferences. The Modified Waterfall methodology was used to drive this project, which consists of five (5) phases: planning, analysis, design, development, and testing. Visual Studio Code, Anaconda, Pycharm, and Xampp are among the tools used to create this system. The system is designed with a user-friendly interface and simple procedures for the user to follow in order to make a recommendation. This system was put through its paces with the help of a specialized functionality tester. More career opportunities will be offered to career vacancy websites in the future. The system will be more advanced in terms of screening possible careers for the user to choose from, and it will be linked directly to career page websites to ensure that all open careers are still available for the user to apply for.

TABLE OF CONTENTS

CONTENT	PAGE
SUPERVISOR APPROVAL	ii
STUDENT DECLARATION	iii
ABSTRACT	iv
TABLE OF CONTENTS	v
LIST OF FIGURES	viii
LIST OF TABLES	x
CHAPTER ONE: INTRODUCTION	
1.1 Introduction	1
1.2 Background of Study	1
1.3 Problem Statement	3
1.4 Project Question	4
1.5 Project Objective	5
1.6 Project Scope	5
1.7 Significance of Study	5
1.8 Conclusion	6
CHAPTER TWO: LITERATURE REVIEW	
2.1 Introduction	7
2.2 Computer Science Career Vacancies	7
2.3 Recommendation System	9
2.3.1 Recommendation system architecture	10
2.3.2 Types of recommendation system	11
2.4 Techniques in Recommendation System	12
2.4.1 Collaborative Filtering technique	12
2.4.2 Content-based filtering	14
2.4.3 Hybrid filtering	17

2.4.4	Comparison between Collaborative Filtering, Content-based Filtering, and Hybrid Filtering.	18
2.5	Existing Career Recommendation System	19
2.5.1	“Recommendation System of Information Technology Jobs using Collaborative Filtering Method Based on LinkedIn Skills Endorsement”	19
2.5.2	“PCRS: Personalized Career-Path Recommendation System for Engineering Students”	21
2.5.3	“Generating unified candidate skill graph for career path recommendation”	23
2.5.4	Comparison between related system	25
2.6	The chosen techniques and features	28
2.7	Summary	29
CHAPTER THREE: METHODOLOGY		30
3.1	Introduction	30
3.2	Research Methodology	30
3.3	Modified Waterfall Methodology Development	32
3.3.1	Planning Phase	33
3.3.2	Analysis Phase	33
3.3.3	Design Phase	34
3.3.4	Development Phase	35
3.3.5	Testing Phase	36
3.4	System Architecture	38
3.4.1	Phase 1: Data Extraction	39
3.4.2	Phase 2: Data Cleaning	39
3.4.3	Phase 3: Web-based system development	39
3.4.4	Phase 4: Creating a user profile	40
3.4.5	Phase 5: Career Recommendation	40
3.5	Project Timeline	42
3.7	Summary	44
CHAPTER DESIGN AND IMPLEMENTATION		
4.1	Introduction	45
4.2	Analysis Requirements of Project Design and Development	45