UNIVERSITI TEKNOLOGI MARA

AFFECTIVE CLASSIFICATION MODEL BASED ON EMOTIONAL RESPONSE AND VISUAL MARKER IN EXTREMIST YOUTUBE VIDEO

ROSHALIZA BINTI MOHD ROSLI

Thesis submitted in fulfillment
of the requirements for the degree of
Doctor of Philosophy
(Information Technology)

Faculty of Computer and Mathematical Sciences

April 2019

ABSTRACT

The research started with concern on issue relevant to Internet ethics then delved into User experience (UX). Extremist YouTube videos (EYV) have been associated with the 'Dark side' and young viewers are prone to the negative influence that comes with it. Under community guideline by YouTube, these videos are not appropriate for public viewing for containing violent content and may cause emotional discomfort. The videos may carry extreme message that moved the viewers emotionally through embedded part that calls for visual attention – also known as visual markers. Past literature has led to identification of three problem statements. Little attention on visual feature of the videos particularly towards understanding which may have influence on viewers' emotion. The knowledge on visual markers that have influence on viewers' emotion worth to be pursued since classification of the videos from affect perspective is overlooked. The lack in existing classifications of the videos might lead to more serious situation if not mitigated at early stage. This research formulated its framework based on KE methodology in order to achieve 4 objectives; to identify visual markers in EYV, to determine viewers' emotional responses upon watching EYV using KE method, to formulate an affective classification model of EYV and to evaluate the affective classification model of EYV. The research performed kansei evaluation experiment involving 20 video specimens, 62 emotional descriptors and 80 university students as the evaluation subjects during data collection. Multivariate analyses were performed to the collected data and based on the results, this research developed an affective classification model with three emotional dimensions; Offensive, Intrigue and Awkward. There are six unique visual markers through the three emotional dimensions. Confirmatory study was conducted to provide justification to the model. Four experts from different working background relevant to the research were interviewed. Results from confirmatory study agreed with the three emotional dimensions. An intriguing discovery where viewers responded with positive affects upon watching EYV in one of the emotional dimensions, could trigger an alarm for potential sympathizers, desensitization towards extremism and instances of extremism is breeding among young viewers. The results of the study can contribute to either domain with emphasis on UX for its applicability and methodology used. It would support research opportunities wherein information on visual marker and its attributes can be used to filter videos in effort to combat extremism. Although the outcomes were based on work under certain limitations, they lend some novelty by proposing affect in video classification. Future work could explore enhancing its applicability using wider scope of subjects, different sets of emotional descriptors or other aspects of visual markers. Additionally, practitioners could use the same information in producing videos capable of invoking emotion among the viewers.

ACKNOWLEDGEMENT

Firstly, I wish to thank God for giving me this opportunity. After what seems like a very long and winding journey, *Alhamdulillah* I made it to the end. Thank you to Kementerian Pengajian Tinggi for 'fuelling' me financially with MyBrain15 scholarship. My most gratitude goes to my supervisor Assoc Prof Dr Anitawati Mohd Lokman for all the guidance from the very beginning. Not forgotten to my co supervisor Dr Syaripah Ruzaini Syed Aris who has been helpful in my time of need.

My appreciation goes to several lecturers who provided the facilities and assistance during Kansei experiment. Also, thanks to the experts who took part in interview for the confirmatory study. Special thanks to my colleagues and friends for helping me directly or indirectly with this research.

Finally, this thesis is dedicated to my forever cheerleaders; better half Izznan AJ, my sons Adam and Idrees, my baby girl Eva and beloved mother Halimah who endlessly support me throughout thick and thin while braving through this journey. I am also grateful to my other family members who have supported me along the way. Perseverance can be bitter at times but the ending is sweet victory. Patience and hard work pay in the end. Hence, this piece of victory is dedicated to all of you. *Hadzha Min Fadhli Rabbi.*

TABLE OF CONTENTS

		Page
CONFIRMATION BY PANEL OF EXAMINERS		**ii**
AUTHOR'S DECLARATION		**iii**
ABSTRACT		**iv**
ACKNOWLEDGEMENT		**v**
TABLE OF CONTENTS		**vi**
LIST OF TABLES		**x**
LIST OF FIGURES		**xii**
LIST OF ABBREVIATIONS		**xiv**
CHAPTER ONE: INTRODUCTION		**1**
1.1	Introduction to Topic	1
1.2	Background of the Study	2
1.3	Problem Statement	6
1.4	Definition of Terms	8
1.5	Research Questions	9
1.6	Research Objectives	10
1.7	Research Process	12
1.8	Hypothesis of Study	14
1.9	Scope and Limitation	14
1.10	Significance of Study	18
	1.10.1 Society and digital native	18
	1.10.2 Policy maker, authorities, advocates and other interested parties	18
	1.10.3 Researchers	19
1.11	Publications Relating to Thesis	20
1.12	Structure of Thesis	21

CHAPTER TWO: LITERATURE REVIEW **23**

2.1 Introduction 23

2.2 Affective Classification 23

2.2.1 Content Analysis 25

2.2.2 Feature Extraction 26

2.2.3 Classification Guideline 28

2.3 Extremist YouTube Videos (EYV) 30

2.3.1 YouTube exacerbates spreading of EYV 34

2.3.2 Young People Are Vulnerable to EYV 35

2.3.3 Visual marker in EYV 36

2.4 Emotional Responses 38

2.4.1 Conceptualizing Video Watching Experience 39

2.4.2 Measures of Emotion 40

2.4.3 Measures of Emotion 43

2.5 Kansei Engineering in this Resesarch 46

2.5.1 Definition of Kansei 47

2.5.2 What is Kansei Engineering (KE)? 48

2.5.3 KE Type 1 and Related Studies 49

2.5.4 Use of KE in Evaluation of Videos, Films or Movies 50

2.6 Summary 51

CHAPTER THREE: RESEARCH METHODOLOGY **54**

3.1 Introduction 54

3.2 Theoretical Framework 54

3.3 Research Approach 56

3.3.1 Research Design 57

3.3.2 Research Model 59

3.4 Phase 1: Knowledge Acquisition 60

3.4.1 Prelude Investigation 60

3.4.2 Ethical Consideration 62

3.5 Phase 2: Exploratory Study 64

3.5.1 Pilot Study 64

3.5.2 Kansei Evaluation Experiment 69

3.6 Phase 3: Kansei Analysis 80