Universiti Teknologi MARA

Human Emotion Recognition for Computer Games Player Using AdaBoost Algorithm

Muhamad Nur Adhwa Bin Muhamad Shukri

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

January 2017

ACKNOWLEDGEMENTS

"In The Name of ALLAH, Most Gracious, Most Merciful and big Gratitude to Prophet Muhammad SAW"

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. Firstly, my special thanks to my supervisor and also my thesis lecturer, Dr. Hamidah Binti Jantan for the ideas, patience, motivated advices, constructive criticism, spending times, morale support and guiding me throughout the every process in completion of this thesis.

Special appreciation also goes to my beloved parents and whole family especially my mother, Jamilah Binti Mat Saad for her understanding and always prays for my success to reach this path of study.

Last but not least, I would like to give my gratitude to my lecturers and my entire classmate friend that involve in discussion, sharing idea and knowledge, brainstorming together and also help and support me to complete my every task on this project.

May Allah S.W.T bless all of you. Thank You.

ABSTRACT

Computer games can be define as a form of interactive entertainment that played on a personal computer where players must overcome challenges, by taking actions in order to succeed. A large number of computer games are available on market but sufferred on market loss. Many computer games player complaints regarding false advertising of computer games because the review, rating, gametags, and footage shown at demo stage, was not representative of the actual product. The idea present in applicationbased regarding how computer game can effect player emotion to support other methodology in marketing sales known as "Emotion Level" to solve the problem. The application has been developed in Python as an in-game application that automatically recognize six basic human emotions, which are anger, disgust, happiness, surprise, fear, and sadness in real time video within a computer game and show the percentage of the emotions at end of the computer game session. The technique used to recognize human emotions is an AdaBoost algorithm as classifier. The usability test are conducted on students in UiTM(T) Kuala Terengganu to make sure the application is meet requirement. This application focusing on developing further implementation of human emotions recognition so that it will be more efficient and effective to be use in the future. In conclusion, this application was developed in order to help computer games player make the best decision before purchasing a computer game on market. The paper discuss a detailed analysis of the project.

TABLE OF CONTENTS

CONT	TENT	PAGE
SUPE	RVISOR APPROVAL	
STUDENT DECLARATION		
ACKNOWLEDGEMENTS ABSTRACT TABLE OF CONTENTS LIST OF FIGURES LIST OF TABLES		iv
		v
		vi
		ix
		xi
СНАР	TER ONE: INTRODUCTION	1
1.1	Introduction	1
1.2	Background of Study	1
1.3	Problem Statement	3
1.4	Objectives	5
1.5	Project Scope	5
1.6	Project Significant	7
1.7	Methodology	8
1.8	Conclusion	8
СНАР	TER TWO: LITERATURE REVIEW	9
2,1	Introduction	9
2.2	Computer Vision	9
2.3	Facial Expression Recognition	11
	2.3.1 Automatic Facial Recognition	12
	2.3.2 Facial Expression Recognition Approach	13

2.4	4 Optimization Technique in Computer Vision	
	2.4.1 AdaBoost	16
	2.4.2 Support Vector Machines	21
	2.4.3 New Feature Extraction	22
	2.4.4 Live Computer Response	23
2.5	Computer Games	24
	2.5.1 An Overview of Computer Games	25
	2.5.2 Computer Games Review	27
	2.5.3 Computer Games Rating	27
	2.5.4 Computer Games Tags	28
2.6	Conclusion	28
СНАР	TER THREE: METHODOLOGY	30
3.1	Introduction	30
3.2	Project Methodology Framework	
3.3	3 Analysis Phase	
	3.3.1 Gathering Information	35
	3.3.2 Data Preparation	35
3.4	System Design Phase	36
	3.4.1 Data Representation	36
	3.4.2 Human Emotion Recognition Process Flow	36
	3.4.3 User Interface	42
3.5	Implementation	43
3.6	Evaluation	45
3.7	Documentation	47
3.8	Conclusion	48
CHAP	TER FOUR: ANALYSIS AND DISCUSSIONS	49
4.1	Introduction	49
4.2	Human Emotion Recognition for Computer Games Player Framework	49