

UNIVERSITY TEKNOLOGI MARA

**FACIAL EXPRESSION RECOGNITION USING
DISCRETE WAVELET TRANSFORM
FOR CUSTOMER SATISFACTION**

NUR LIYANA ASMIRA BINTIYASERI

BACHELOR OF SCIENCE (Hons.)COMPUTER SCIENCE
FACULTY OF COMPUTER AND MATHEMATICAL SCIENCES

JULY 2014

Universiti Teknologi MARA

**Facial Expression-Recognition Using
Discrete Wavelet Transform For
Customer Satisfaction**

Nur Liyana Asmira bintiYaseri

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

July 2014

ABSTRACT

Facial expression recognition is designed to identify the customer's satisfaction when they are being served at the counter. Facial Expression Recognition techniques using Discrete wavelet transform (DWT) coefficient and the values of mean (M) and moment (m) that computed from DWT has been used as the features that serves as input to a Support Vector Machine (SVM). SVM acts as a classifier which classifies the facial expressions either as happy or not happy. The research methodology involves several phases which are preliminary study, analysis of literature, design of application, development of application, and implementation and testing and documentation. The dataset that have been used are 210 images from Cohn-Kanade database and 600 images from personal data that consists of happy and not happy expressions. Then, 40% of the images were used as testing input while the other 60% were used as training input. These images are manually cropped to obtain the precise face shape. The project is a stand-alone and developed using JAVA and MATLAB. The best accuracy rate obtained is 79.76% when the SVM is trained on eyes region for Cohn-Kanade database.

TABLE OF CONTENTS

CONTENTS PAGE

SUPERVISOR'S APPROVAL	ii
DECLARATION	in
ACKNOWLEDGEMENT	iv
ABSTRACT	v
TABLE OF CONTENTS	vi
LIST OF FIGURE	viii
LIST OF TABLES	ix
CHAPTER 1	1
1.1 Introduction	1
1.2 Problem Statement	2
1.3 Objectives	3
1.4 Scope of Study	4
1.5 Significance of Project	4
CHAPTER 2	5
2.1 Introduction	5
2.2 Image	5
2.3 Image processing	7
2.3.1 Digital image processing	8
2.3.2 Human vision and computer vision	8
2.4 Image processing technique	9
2.4.1 Pre-processing	9
2.4.2 Facial Feature Extraction	11
2.4.3 Facial Expression Recognition	12
2.5 Current development of application	13
2.6 Summary	13
CHAPTER 3	14
3.1 Introduction	14
3.2 Research Methodology	14