BORANG PENGESAHAN STATUS TESIS

JUDUL: **INTEGRATION OF PASSWORD ENCRYPTION, THUMBPRINT AND FACE AUTHENTICATION SYSTEM**

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INTEGRATION OF PASSWORD ENCRYPTION, THUMBPRINT AND FACE AUTHENTICATION SYSTEM

SOO SIT KHAM

This report is submitted in partial fulfillment of the requirements for the Bachelor of Computer Science (Software Development)

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
KOLEJ UNIVERSITI TEKNIKAL KEBANGSAAN MALAYSIA
2005

DECLARATION

I hereby declare that this project report entitled

INTEGRATION OF PASSWORD ENCRYPTION, THUMBPRINT AND FACE AUTHENTICATION SYSTEM

is written by me and is my own effort and that no part has been plagiarized without citations.

STUDENT : _____ Date: 21.11.2005

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(MR. BURHANNUDIN BIN MOHD ABOOBAIDER)

DEDICATION

To my beloved parents, Mr. Soo Hei Weng and Mrs. Chan Gek Lin, for their seems less expression of love and fully support ...

To my supervisor, Mr. Burhannudin bin Mohd Aboobaider, for making it all worthwhile ...

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ABSTRACT

Password only encryption schemes can easily be breached and unreliable. By using biometric data along, it is possible to alleviate fraudulent usage of particular protected content. To deal with security problems, an Integration of Password Encryption, Thumbprint and Face Authentication System is presented, as those technologies have now reached a high degree of maturity such as allow successful application on secure authentication. The purpose of the project is to implement a successful multimodal biometric authentication system using efficient image processing algorithms and linked with U.are.U ® 4000 fingerprint scanner. This thesis describes the design and implementation Minutiae Approach and Eigenfaces Approach that are applied to thumbprint and face images respectively. Basically, this system comprises of three modules which is registration, authentication and image processing. It is essentially a pattern recognition system that operates by acquiring biometric data from an individual, applying image processing technique to obtain a feature set from the acquired data and comparing this feature set against the template set in the database. This system provides a reliable authentication schemes to either confirm or determine the identity of an individual. Object Oriented Analysis and Design has been chosen as a methodology for this project and will be implemented along the system development process to ensure the objectives of the project can be fulfilled. Undoubtedly, the proposed system has some value added in addressing problem.

ABSTRAK

Kata laluan yang hanya berasaskan skema *encryption* amat mudah digodam dan mempunyai tahap keselamatan yang rendah. Dengan menggunakan data biometrik, ia mungkin mengurangkan masalah penipuan bagi kandungan yang terlindung. Untuk menyelesaikan masalah ini, system yang terdiri daripada gabungan penggunaan kata laluan, pengesahan cap ibu jari dan wajah telah diperkenalkan, di mana teknologi ini telah mencapai tahap kematangan yang tinggi seperti menjayakan aplikasi dengan adanya proses pengesahan yang selamat. Tujuan projek ini adalah untuk melaksanakan system pengesahan pelbagai biometrik yang berjaya dengan menggunakan algoritma pemprosesan imej yang berkesan dan disambungkan dengan U.are.U ® 4000 pengimbas cap jari. Tesis ini menerangkan rekabentuk dan perlaksanaan pendekatan *Minutiae* dan *Eigenfaces* yang digunakan untuk imej-imej cap ibu jari dan wajah masing-masing. Pada asasnya, sistem ini terdiri daripada tiga modul iaitu pendaftaran (*enrollment*), pengesahan (*authentication*) dan pemprosesan imej (*image processing*). Sistem ini asasnya merupakan system pengecaman corak yang beroperasi dengan mendapatkan data biometrik daripada seseorang individu, teknik pemprosesan imej digunakan untuk mendapatkan satu set ciri (*feature*) daripada data yang diperolehi dan membandingkan set ciri ini dengan set *template* dalam pangkalan data. Sistem ini memberi skim pengesahan yang lebih selamat untuk menentukan identiti seseorang individu. Analisis dan reka bentuk yang berasaskan objek telah dipilih sebagai kaedah bagi projek ini dan ia akan dilaksanakan sepanjang proses pembangunan sistem untuk memastikan pencapaian objektif. Memang tidak dapat dinafikan bahawa cadangan system ini mempunyai nilai tambahan dalam menyelesaikan masalah.

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LIST OF ABBREVIATIONS

NO	ABBREVIATION	NAME
1.	AFIS	Automated Fingerprint Identification System
2.	API	Application Program Interface
3.	AUT	Application Under Testing
4.	CASE	Computer Assisted Software Engineering
5.	CSCI	Computer Software Configuration Item
6.	CSU	Computer Software Unit
7.	COM	Component Object Model
8.	DLL	Dynamic Link Library
9.	IPA	Image Processing Application
10.	KUTKM	Kolej Universiti Teknikal Kebangsaan Malaysia
11.	MATLAB	Matrix Laboratory
12.	OOA	Object-Oriented Analysis
13.	OOD	Object-Oriented Design
14.	OOAD	Object-Oriented Analysis and Design
15.	OOSE	Object-oriented Software Engineering
16.	PETFS	Integration of Password Encryption, Thumbprint and Face Authentication System
17.	PIN	Personal Identification Number

18. USB	**Universal Serial Bus**
19. UTM	**University Teknologi Malaysia**
20. VSS	**Visual SourceSafe**

CHAPTER I

INTRODUCTION

1.1 Project Background

The project to be developed is "Integration of Password Encryption, Thumbprint and Face Authentication System (PETFS)". In the emerging ubiquitous information society, advanced digital personal authentication systems are indispensable for providing value-added services. This system utilizes, or is capability of utilizing, more than one physiological or behavioral characteristic for enrollment or verification.

Biometrics is emerging as the most foolproof method of automated personal identification in demand by an ever more automated world. It is one approach to the authentication of an individual's claimed identity, and therefore to the authentication of that person's claimed rights to gain access to particular processes, systems or pieces of information. It is an attractive solution because of the perception that aspects of one's physiology cannot be reliably emulated.

PETFS is a multimodal biometric system uses multiple applications to capture different types of biometrics to meet stringent performance requirements. A combination of thumbprint and face authentication is chosen for this project. This enhanced structure takes advantage of the proficiency of each individual biometric and can be used to overcome some of the limitations of a single biometric.