

BORANG PENGESAHAN STATUS TESIS*

JUDUL: ONLINE BASED SIGNATURE VERIFICATION TOOLS

SESI PENGAJIAN: 2012 / 2013

Saya TANG HAN YANG
(HURUF BESAR)

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Alamat tetap: 147, JLN SRI PELANGI

TMN BKT PILAH PERDANA

72000 K.PILAH, N.SEMBILAN

Tarikh: _____

(TANDATANGAN PENYELIA)

DR AZAH KAMILAH MUDA.

Nama Penyelia

Tarikh: _____

CATATAN: * Tesis dimaksudkan sebagai Laporan Akhir Projek Sarjana Muda (PSM)

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ONLINE BASED SIGNATURE VERIFICATION TOOLS

TANG HAN YANG

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

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA
2013

DECLARATION

I hereby declare that this project report entitled
ONLINE BASED SIGNATURE VERIFICATION TOOL

is written by me and is my own effort and that no part has been plagiarized
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STUDENT : _____ Date: _____
(TANG HAN YANG)

SUPERVISOR : _____ Date: _____
(DR AZAH KAMILAH MUDA)

DEDICATION

This report is dedicated to my parents, Mr. Tang Hong Kiat and Mrs. Cheong Chau Lin, for their fully support.

To my supervisor, DR AZAH KAMILAH MUDA and all my friends, for making it all worthwhile and have provided encouragement and guidance all the way during the completion of the report.

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ABSTRACT

Signature verification is a regular task in forensic document examination which is one of the methods that can help decide whether a questioned signature matches known signature samples. In business, there is always fraudulent and deceptive activity that leads to financial loss. Hence, Online Based Signature Verification Tool will timely and accurately help recognize the original owner of the handwriting or signature and prevent fraud. One of the advantages of this tool is Online Based Signature Verification Tool consists of clients and server that have different role and handle different task. Server side will responsible with all client requests to register new signature owner and verify the signature, while client side will responsible to receives the input and show the result of process from server to the user. This kind of system architecture will make sure the Signature Verification tools more maintainable and secure. This tool consist 5 main modules which are Register new signature owner (Browse Document), Register new signature owner (Handwriting), Verify Signature Owner (Browse Document), Verify Signature Owner (Handwriting) and Search Server Activity Log. The programming language used to develop the tools is Java.

ABSTRAK

Pengesahan tandatangan merupakan tugas dalam pemeriksaan dokumen forensic yang boleh membantu membuat keputusan sama ada satu tandatangan yang dipersoalkan adalah sama dengan sampel tandatangan yang disimpan. Dalam perniagaan mempunyai banyak aktiviti penipuan yang mengakibatkan kerugian kewangan. Oleh itu, Online Based Signature Verification Tool akan mengelakkan penipuan dengan membantu mengiktiraf pemilik asal tulisan tangan atau tandatangan dengan tepat. Salah satu kelebihan alat ini adalah ia mempunyai Client dan Server yang mempunyai peranan yang berlainan dan mengendalikan tugas yang berbeza. Server akan bertanggungjawab mengendalikan semua permintaan dari Client seperti mendaftar pemilik tandatangan baru dan membuat pengesahan kepada tandatangan, manakala Client pula bertanggungjawab untuk menerima input daripada pengguna dan menunjukkan keputusan proses yang hantar dari Server kepada pengguna. Seni bina system ini memastikan Online Based Signature Verification Tool lebih kekal dan selamat. Alat ini mempunyai 5 modul iaitu mendaftar pemilik tandatangan baru (melayari dokumen), mendaftar pemilik tandatangan baru (tulisan tangan), mengiktiraf tandatangan (melayari dokumen), mengiktiraf dokumen (tulisan tangan) serta carian Server aktiviti log. Bahasa pengaturcaraan yang digunakan untuk membangunkan alat ini adalah JAVA.

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CHAPTER I

INTRODUCTION

1.1 Project Background

Signature verification is a regular task in forensic document examination which is one of the methods that can help decide whether a questioned signature matches known signature samples. As a pattern recognition application, the performance of signature verification tool is basically depends on the extraction (extracted features from various style of signature) and classification (determination of which group or classes the extracted features are belonging to).

In business, there is always fraudulent and deceptive activity that leads to financial loss; customer loyalty and faithfulness can also be affected when unfavourable news hits the streets. Hence to offset potential negative outcomes of any kind and discover more forgeries before losses occur, there are needs for existence of an Online Based Signature Verification Tool that can timely and accurately help recognize the original owner of the handwriting or signature.

Online Based Signature Verification Tool consists of clients and server that have different role and handle different task. Server side will responsible with all client requests to register new signature owner and verify the signature, while client side will responsible to receives the input and show the result of process from server to the user. Beside this, the information of database can only access by server side. This kind of system architecture will make sure the Online Based Signature Verification Tool more maintainable and secure.

1.2 Problem Statement

In today business, the impersonating fraud activity that imitate other people signature on the business documents always happen. This kind of fraudulent and deceptive activity leads to financial loss and losing of customer loyalty to the business. For example, the imitation of signature on bank cheque to withdraw money from bank account will bring lose of money and the faithfulness of customer to the bank. Hence it is important to introduce a signature verification tool that can help verify the signature and prevent fraud activity.

The current manual signature verification is very time consuming and troublesome. The process to figure out the uniqueness of individual features in the signature is time consuming because the process requires the analyst to observe, compare and evaluate the feature of both questioned and original signature to find out the similar unique features between them. Hence there will be lack of time efficiency when staffs need to verify many signatures on business document or cheques manually without using the help of signature verification tool.

To carry out the signature verification process, the individual features for each signature and similar features between original signature and questioned signature must being identified. By using a verification system, it makes uniqueness of individual signature can be more easy to be identified and comparison can be make efficiently.

Beside this, due to expansion of business, the branch of the business is located at different location. Hence, there is a problem to connect the signature verification tool to the main signature database as database cannot locate in all the branches because of security issues. Hence, an Online Based Signature Verification Tool can ensure that the sub branches of the business can connect to the main signature database through internet to get the information for the signature verification process.

1.3 Objective

This project embarks on the following objectives:

- i. To reduce fraud and increase confidence of customer to the business
- ii. To increases efficiency of business process by helps staff make faster decision in signature verification on paper document.
- iii. To prevent any loss because of bad signature features identify in Signature verification process.
- iv. To ensure connection of database with all the business branches with promising the safe and secure of the Online Based Signature Verification Tool.

1.4 Scope

1.4.1 User

Online Based Signature Verification Tool targets users from any business or government agency which needed signature verification to make sure the validity and identity of signature owner when carry out transaction process.

1.4.2 Modules

Module I: Register Signature Owner Module

This module allow the registration of signature owner by inserting the name, identification card number of owner, and browsing the paper document consist of the signature or sign on the space provided.

Module II: Signature Verification Module

This module allow the browsing of paper document consist of signature or sign on the space provided, then the Signature Verification Tool will verify it by extracting individual feature of the questioned signature and compare with handwriting features of original signature exists in the database. The signature owner wills being show out if it exists in the database.

1.5 Project Significance

As the project objective is to increase efficiency and reduce fraud in the business process, there were several project significance to be as a result and purposes from developing the application:

- i. Time saving and accelerate business processes – provides faster paper document delivery, approval, in bank cheque processing and document management To increases efficiency of business process by helping staff make faster decision in signature verification on paper document.
- ii. Database storage – provide a digital storage for all signatures and their signature owner information that provide references for future signature verification process.
- iii. Reduce operational risks – Providing a reliable and trustworthy tool to ensure integrity and authenticity of transaction or business documents.
- iv. Preventing the exposure of business transaction to human errors – Reduce the number of financial loss because of human errors when verifying signatures on the business documents.

1.6 Expected Output

At the end of this project, the expected output and result would be:

- i. Specific or Potential Applications - A tool (prototype) for Signature Verification.

1.7 Conclusion

In this chapter, a brief introduction on the Signature Verification has been discussed. The disadvantages of manual signature verification is being listed in the problem statement and the objective have also been identified in this chapter in order to give a clear view on why Online Based Signature Verification Tool has been proposed. Moreover, the discussion on the scope of the project pointed out the target user of this project and state the modules exists in the project. With these, hopefully, by developing the proposed Online Based Signature Verification Tool, the objective and aim of the project can be achieved.

CHAPTER II

LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

Beginning of this chapter will discuss the literature review. The aim is to broaden the understanding of the details of the uncovered areas in literature which the study attempts to make a useful contribution.

The second part of this chapter will introduce an appropriate methodology, models and techniques that fit the system that will be developed to fulfill user requirements. In order to develop the prototype of Online Based Signature Verification Tool, the OOM (Object Oriented Methodology) has been chosen.

The third part of this chapter is discussed about the requirement of hardware and software to develop this project.

2.2 Facts and findings

Fact and finding is a topic about the discovery or determination of fact or accurate information. After analyze the data gathered and processed, it can be applied to the system so that the strengths are retained and the weaknesses are eliminated.

2.2.1 Handwriting Analysis

Handwriting is personality and individual because the relation of characters, styles and shapes of writing are dissimilar from one to another. This has caused handwriting to be one of the biometric identifications based on the behavioral characteristics of handwriting analysis in pattern recognition. Biometric is the science of identify or verify the identity of a person based on physiological or behavioral characteristics. Behavioral characteristics are action carry out by a person in typical way including signature (Rohlik, 2003).

Handwriting analysis consists 2 categories, which are hand written recognition and handwritten identification. Handwritten recognition is a mission of recognize the exact word or character written by a person and interpreting the conveyed meaning. While handwritten identification will ignore the meaning of the written word or character when differentiates writers based on style or shape of writing, It will recognize the original writer of that handwriting.

There are 2 tasks involved in the process of identifying handwritten authorship, which are identification and verification. The identification task will decide the writer of sample handwritings from many writers. On the other way, the verification task will decide whether one question handwritings and suspect handwritings are written by the same writer.

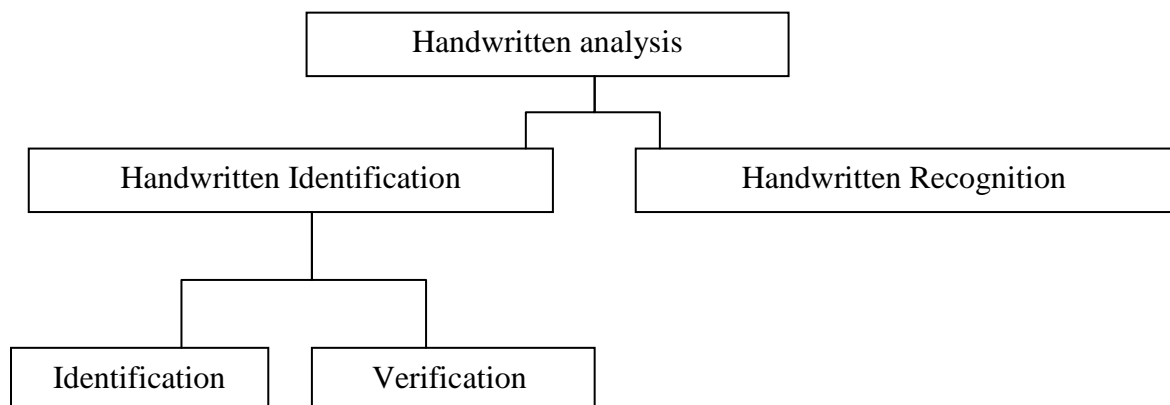


Figure 2.1: Handwritten Analysis Domain

2.2.2 RMI (Remote Method Invocation)

Java Remote Method Invocation (RMI) is a JAVA Application Programming Interface (API) that allow programmer performs object oriented version of Remote Procedure Call (RPC) which support direct transferring of serialized JAVA object between different computers and interact with each other using distributed network.. RMI has the capability to pass one or more objects along with the request. These objects can be new Java objects, or simple Java wrappers around existing API. RMI provides a direct and simple model for distributed computation with Java objects

The object can include information that will change the service that is performed in the remote computer. For example, when user at remote computer fills a register signature owner form, the Java program interact with the user could communicate and exchange information by using RMI, with a Java program located in another computer that always had the latest information about the signature owner. In the return, that program would send back an object and related method and information that would enable the remote computer program to notify the status of the registration process. In this way, user and company both would save time by catching mistakes early. Whenever the company policy changed, it would require a change to a program in only one computer.

RMI is implemented three layers:

- A stub program which locate in the client side of the client server relationship, and corresponding skeleton at the end of the server. The stub appears as program which being call by calling program for a service.
- A Transport Connection Layer, which manages request and sets up request.
- A Remote Reference Layer that acts differently based on the parameters passed by the calling program. For example, this layer can decide calls a single remote service or multiple remote programs based on request.