PROJ 102 Project Proposal

Project #001

Is This a Real Signature or Not?

Group #046

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Abstract

Biometrics and signature verification are the most common ways of preventing forgery in many fields like bank security systems. It's important for the users of these systems to know that, if they're dependable or not. Our goal is to answer that question, in other words finding out the effectiveness of signature verification systems.

Our main strategy is giving project groups 5 reference signatures of a person and a few other signatures that are said to belong to this person.Our mission as a team is trying to understand if the given signature sample is genuine or forgery by looking at other samples.There will be 6 experiments for us to decide if the 2 signature samples on the screen are from the same person or a forgery. We'll be going over 50-100 signatures.

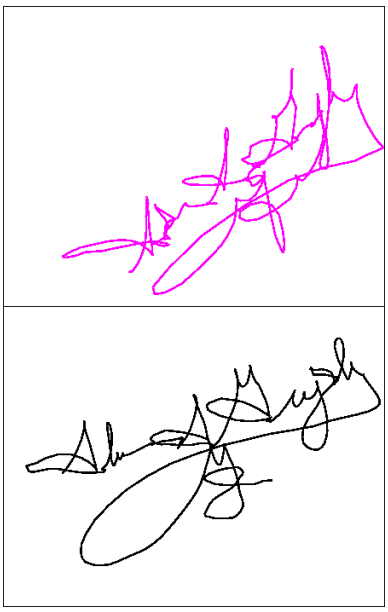
Our process tool is a test software that records our answers. We are going to run it through our computers. Today using signature verification and biometrics are very widespread so it's important to identify what problems ordinary people have about this issue. If we identify that, we could make a big progress in security field.

1. Introduction

Signature verification is a widely searched topic in the recent times. It remains at a hot topic because signatures are one of the most important identification technique of one. Articles and books have been written about signature verification.

Biometric handwriting characteristic are totally peculiar to an individual and it is impossible to imitate. Because of this, handwriting still remains as the most effective identifiers today.

In online(dynamic) signature verification, multiple biometric characteristics of a signature in examine are scrutinized and compared against a reference signature kept on file to make a conclusion about measure the confidence value of the signature’s genuineness. If there are more genuine reference signatures are available, the accuracy of the experiment will increase.The most advanced signature verification systems has a combination of engines using different approaches for comprehensive signature verification. Each engine analyzes biometric characteristics such as speed, acceleration, deceleration, stroke, length, pressure and timing received directly during the act of signing together with other technology that scrutinizes signature shape. Finally, the results received from different methods of analysis are combined to provide a reliable measure of the likelihood of coincidence between the signature in question and reference signature. The success of dynamic signature verification in such systems relies on analysis of graphical representation of a signature and biometric characteristics received during the process of signing.



1.1 Example signature
1.2 Example signature
1.3 Forgeries

- What is biometrics ?

Biometrics is the technology and science of assessing and analyzing biological data. Biometrics is really important in information technology at identifiying human characteristics and the human charasteristics that are commonly examined are DNA, eye retina and irises, voice patterns, facial patterns, hand measurements and fingerprints, for confirmation purposes.

- So how does authentication by biometric work?

Biometric authentication is a major in corporate and public security systems also in point of sale applications.
Biometric devices usually consist of :

- A reader or scanning device
- A database that stores the biometric data for comparison
- Software that converts the scanned information into digital form and compares match points

Biometrics are usually used to prevent identity theft . The more unique your characteristics are the more secure you are in daily life. Signatures are the most commonly used verifications of identity so the forgery of signatures may become a severe problem.

- Signature and Identity, Personality

Signatures are a snapshot of our personality. The way we sign our signature, dark or light, bold or thin, underlined or not underlined indicates a lot about our character and our deepest thoughts. Signatures reveal a lot about our attitude and represent our personality traits enourmously. By analyzing one's signature we can learn about their emotions, communication abilities, creativity and so on.

Signature analysis happens with examining several features of signatures, and these are:

- Underlining the signature
- Use of dots in the signature
- Size of the signature
- Size of the first letter
- Slant of the signature
- Loops or Backward strokes in the signature

- Signature Verification

Examination of a signature on a debateable instrument to determime whether the hand writing is accurate and whether the person signing the check is authorized to use the account.

- Advantages of Signature Verification
  - User-friendly
  - Non-invasive
  - Well accepted legally and socially
  - Already acquired in a number of applications

- Disadvantages of Signature Verification
  - Forgeries
  - Higher error rates than other traits
  - Large temporal variation
  - Affected by the physical and emotianol state of the user

- Online Signature Verification

This method is described for online hand-written signature verification. These signatures are attained by using a digitizing tablet which captures both dynamic and characteristic information of the writing. To confirm the signature's originality's certainity, multiple examples of the original signature should be uploaded. The correspondence between an input signature and the reference set is computed using string marching and the similarities are compared with the others.

- Offline Signature Verification

This method is described as the pen and paper method. Basically this is comparing in a visual way. Offline signatures deal with a static image of signature.

- Online Signature Verification vs Offline Signature Verification

ONLINE	OFFLIN E
It is harder to imitate. It works on the dynamic process of generating the signature.	Offline systems deal with the static image of the signature. It is easier to imitate.
In-expensive and already integrated in some devices.	Pen and paper method. Ubiqutious.

In this project we are going to examine one's awareness of a forgery signature, we are going to give information about the different ways of confirming a signature to be original.

2. Definition and Scope

2.1 Project Objective Statement

The final report of the proposal is due on January 6, 2012. We will also have presentations which will take place between 9th of January and 20th of January, 2012.

2.2 Deliverables

By providing us to measure human abilities of recognizing forgery in a limited time,this project will raise awareness, rather than a concrete conclusion.That awareness will be used for making improvements in signature verification systems and provide a better training for people that are responsible for signature verification like bank employees.

2.3 Milestones

Our critical steps in this project will be installing the software that we'll use during this project. Then we will participate in experiments throught this software. Finally we'll find a result about how good humans are in signature verification.

3. Project Objective Planning

3.1 Work Breakdown Structure

Every week we are going to have a half-hour meeting with our advisor and our team members. We will discuss the proceeding of the project. We have an equal breakdown of work as a team. We meet with each other and do the project together. Because our project does not require money we do not need financial resources.

Every week on a chosen day we are going to have a small task: identifying forgery signatures. If we indicate the right ones each time we will get awarded.

3.2 Organizational Structure

Our team consists of 2 people. We both stay at the dorms so we always have spare time for Proj 102. We arranged a half hour meeting with our supervisor each week. We are responsible of compeleting a task that our supervisor will assign and this is for each week too.

3.3 Time and Resource Plan

Tasks	Description	Duration (week)	Number of Precedents	Precedents			Start	Finish
1	Getting started – Research about Signature Verification System(SVS	1	0				0	1
2	Installing Software Programme	1	1	1			1	2
3	First Experiment and evaluation of the given datas	1	1	2			2	3
4	Second Experiment and evaluation	1	1	3			3	4
5	Researching about biometrics	1	1	4			4	5
6	Third Experiment-Testing the samples	1	1	5			5	6
7	Forth Experiment-	1	1	6			6	7
8	Fifth Experiment	1	1	7			7	8
9	Sixth Experiment	1	1	8			8	9
10	Discussing the results	1	1	9			9	10
11	Finalizing the project	1	1	10			10	11

	Week														
Person Responsible	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Zeynep															
Selin, Zeynep															
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References

Anil K. Jain, F. D. (2002). Online Signature Verification. *Journal of Pattern Recognition*.

M.E. Munich, P. P. (1999). Visual Signature verification using affine arc-length. *IEEE Computer Society Conference on Computer Vision and Pattern Recognition.* Colorado: IEEE.

Park, U. (n.d.). *Signiture verification lecture notes*. Retrieved from http://www.cse.msu.edu/~cse802/Papers/802_Signature_Verification.pdf