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NFC ENABLED SECURITY SYSTEM FOR BANKING APPLICATIONS WITH SIGNATURE VERIFICATION

[1]Mr. N.S Balachandran, [2]Mr. A.SYEDMusthaba,M.E

Abstract— **A signature (from Latin: signare, "to sign") is a handwritten (and often stylized) depiction of someone's name, nickname, or even a simple "X" or other mark that a person writes on documents as a proof of character and expectation. The author of a signature is a signatory or signer. Like a handwritten signature, a signature work describes the function as readily recognizing its creator. A signature may be confused with an autograph, which is mostly an artistic signature. This can prompt disarray when individuals have both an autograph and signature and as such some people in the public eye keep their signatures private whilst fully publishing their autograph. The need for an automatic verification system is based on the reality that the signature is broadly used as a means of individual verification. Verification can be achieved either Offline or Online. Offline systems use the scanned picture of a signature. Online systems use active information of a signature obtained at the moment when the signature is prepared. This paper explains the method for the Offline Verification of the signatures using a set of simple shape based geometric features. This paper uses that signature for security purpose in banking applications with the help of embedded and a NFC technology.**

Index Terms— **Biometric, personal verification, signature verification, system security.**

I. INTRODUCTION

A signature is a handwritten portrayal of someone's name, nickname or even a simple 'X' that a person writes on credentials as an evidence of identity and intention. The author of a signature is a signatory. Verification is an authentication of accuracy or actuality and contrast of two or more items, or the use of complementary tests, to ensure the accurateness, appropriateness or genuineness of the information. Signature verification is a general behavioral biometric to recognize individual for purposes of proving their identity. Signatures are mainly helpful for recognition of an individual human since every person's autograph is extremely unique, particularly if the dynamic properties of the signature are measured in addition to the static features of the signature.

ATMEGA Microcontroller is the heart of the device which handles all the sub devices is connected. It has glimmer sort reprogrammable memory. It has some peripheral devices playing this paper perform. It also provides sufficient power to inbuilt peripheral devices. We require not offer separately to all devices. The peripheral devices also activate as low power operation mode.

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N S Balachandran, *Dept of Electronics and Communication Engineering, Gnanamani College of Engineering, , TamilNadu.*

A.SYEDMusthaba,M.E, *Assistant Professor, Department of Electronics and Communication Engineering, Gnanamani College of Engineering, Namakkal , Tamilnadu .*

II. REVIEW

A. On-line Signature Verification by Stroke-dependent Representation Domains

In this paper a new system for dynamic signature verification is presented. It is based on the consideration that each region of a handwritten signature can convey personal characteristics in diverse domains. Therefore, a multi-expert approach is considered in which each stroke of the signature is evaluated in the most profitable domain of representation. The experimental results demonstrate the effectiveness of the proposed approach.

B. Recent Advancements in Automatic Signature Verification

This paper presents some of the main strategies for dynamic and static verification of handwritten signatures and focuses the most promising directions of scientific research, starting from the analysis of the literature of the last decade.

C. Can Signature Biometrics Address both Identification and Verification Problems

Handwritten signatures are one of the most socially acceptable and traditionally used person identification and authentication metric. Although a number of authentication systems based on handwritten signatures have been proposed, a little attention is paid towards employing signatures for person identification. In this work, we address both the identification and verification problems related to the analysis of dynamic handwritten signatures. In this way, the need to present username before biometric verification can be eliminated in the current signature based biometric authentication systems.

D. Automatic Signature Verification: The State Of The Art

In recent years, along with the extraordinary diffusion of the Internet and a growing need for personal verification in many daily applications, automatic signature verification is being considered with renewed interest. This paper presents the state of the art in automatic signature verification. It addresses the most valuable results obtained so far and highlights the most profitable directions of research to date. It includes a comprehensive bibliography of more than 300 selected references as an aid for researchers working in the field.

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III. METHODOLOGY

A) Problem Statement

It authenticates a person's identity by verifying personal characteristics based on Biometrics. They are two types

- Physiological – Face, Fingerprint, Hand, IRIS, DNA
- Behavioral – Keystroke, Signature, Voice

According to the problem, Signature is a Behavioral. It provides the security in various ways, such as Banking Applications, Government Documents, Signing between countries and Student Mark sheets.

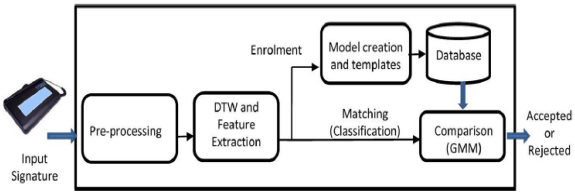


Figure 1.1: Signature verification techniques

Mostly signature verification techniques are only used for software registration only like in the figure 1.1. They don't explain how to use this for real time applications.

B) Drawbacks of Existing System

- Manual Signature Verification
  - Two individuals checking the same signature
  - They have different opinions.
  - They derive different conclusions about the authenticity of it.
- Online Banking Process in many places uses
  - Numerical based recognition or
  - Character based recognition or
  - Image based recognition

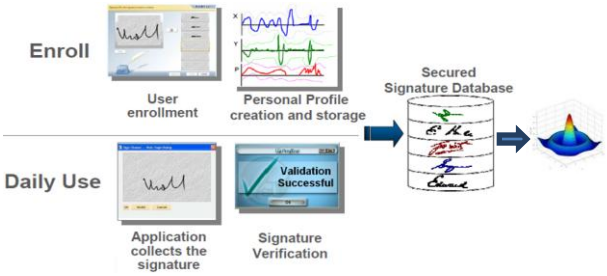


Figure 1:2: Data Security – Signature Verification using MATLAB

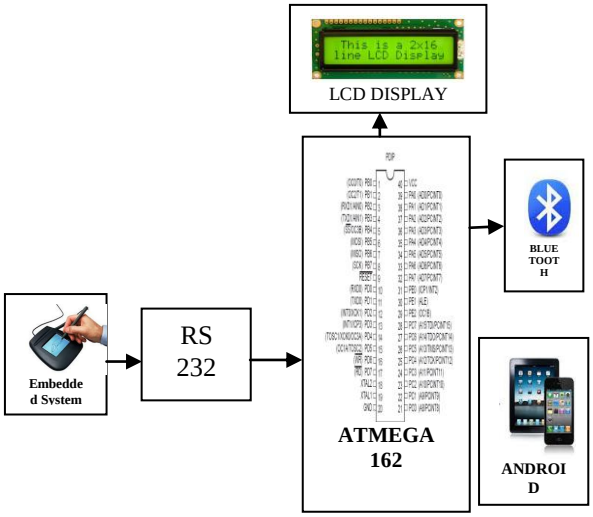
The proposed system is used to verify the signature with the help of MATLAB and uses this data as a security factor for banking applications which is in figure 1.2.

This work has the following features,

1. It uses MATLAB image processing for a verification purpose that will increase the reliability.
2. ATMEGA microcontroller is used as embedded processor; it has two serial ports, so at a time one can communicate with both the phone and PC.
3. For a mobile, it develops the apps based on android that makes our system flexible (figure 1.3).

Figure 1.3: Mobile apps

IV. BLOCK DIAGRAM FOR SIGNATURE VERIFICATION



V. CONCLUSION AND FUTURE ENHANCEMENTS

This paper introduced a procedure to extract features from handwritten signature images and extracted feature is used for verification. It is a well-known fact that any automatic signature verification system requires a very small training set of signatures.

In future one can add the following options to this proposed work as,

- Make it as a compact unit by using Raspberry PI
- Not only banking, but also add it to access devices and other security applications
- Provide the security against the hacking of data while using Bluetooth

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