FINGERPRINT BASED BIOMETRIC ATM AND CREDIT CARD PAYMENT

Dhananjay Kumar Tiwary[1], Chandan Kumar[2], Amit Kumar[3], Ms. Arul Selvi[4]

[1, 2, 3]UG Students, Department of Electronics and Telecommunication Engineering, Bharath University, Chennai, India.

[4]Assistant Professor, Department of Electronics and Telecommunication Engineering, Bharath University, Chennai, India.

Abstract—**Nowadays most of us are making our maximum purchase and shopping through card payments instead of carrying hard cash with us. The existing card payment system is good but no more reliable in terms of security of our privacy. This proposed paper is about the introduction of biometric fingerprint verification for the payment gateway which enables the user more secure and reliable payment method than the existing one. The fingerprint verification of the card user confirms the identity of the actual card holder, which is not in facility in the existing system. If the fingerprint matches with one stored in bank's database than card holder is free to use the card. But, if the fingerprint does not matches with the database record than a sms alert will be send automatically on the mobile number registered by the user in bank's record. This will also help the bank to cut the extra effort for tracking the position of the card when customer registers a complaint about card lost or stolen. In this system we have used ARM LPC2129 chip as the core processor.**

Index Terms— **ATM payments, Biometrics, Fingerprints. GSM technology.**

I. INTRODUCTION

Here in this proposed project we are going to provide the at most security as we are giving Biometric authentication to allow user to access their account, as well as the identity confirmation of the account holder. So, whenever users wish to access their account, they have to go through the fingerprint authentication for their identity verification. A fingerprint scanner integrated with computer using serial port interface scans the finger. The ARM processor reads the data received from fingerprint scanner and compares it with from database record. If the comparison goes successful than the user is allow to access the account. If the fingerprint match is failed than an alert message is being sent to the user's registered mobile number. For the alert message a GSM module is interfaced with processor using serial interfacing MAX-232.

The registered person only can modify the details stored in the record. For this purpose the password authentication process will also be there after the successful verification of fingerprint.

II. EXISTING SYSTEM

Existing cards contains the information about the card and its holder in the magnetic strip attached with the card. It means if anyone else have other's card and password, than the card can be used in any means without any identity confirmation. Although, various approaches have been performed in order to gain the consumers' trust in credit and debit card transactions for e.g. 3D secure password authentication by SBI's online payment gateway, or many shopping centres have proposed extra identity card to be carried with the payment card for verification purpose. But, still these methods have not met the level of security and reliability that a customer wishes.

III. PROPOSED SYSTEM

The introduction of the fingerprint authentication in existing payment system will bring more security and reliability to the customers. It will allow them to use their cards more freely. The proposed system is mainly based on embedded system which to associated with technologies of biometrics authentication and today's existing communication network. The primary working model of this system is shown in following block diagram:
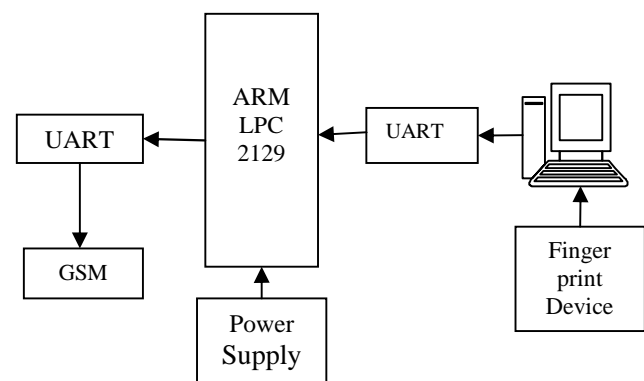
Fig. Block diagram

IV. TECHNOLOGY OVERVIEW

The two most recent and most widely used technologies of modern era have been used in this project. A short introduction about then are as follows:

- **Biometrics:** Biometrics refers to the use of physical characteristics or deeply ingrained behaviour or skills to identify a person. Physical characteristics that can be used include facial features, fingerprints, iris, voice, DNA. The big promise of biometrics is as a more secure and convenient alternative to using passwords to identify users of computer systems.

- **GSM:** A GSM modem is a wireless modem that works with a GSM wireless network. A wireless modem behaves like a dial-up modem. The working of GSM modem is based on commands. The commands always start with AT (which means AT tension) and finish with a <CR> character.

V. HARDWARE AND SOFTWARE DESIGN

The entire system design is implemented in two sections which are hardware and software. The hardware designing section is purely based on embedded system where as software section is designed on the basis of two methods of identification and verification.

- **Hardware:** The entire hardware section is designed with LPC2129 as core processor. Some of the hardware modules used are as follows:
  - GSM Module
  - Fingerprint scanner
  - Max-232 UART

- **Software:** The software part of the project contains of following two sections:
  - **Identification**: A one-to-many match. The user provides a biometric sample and the system looks at all user templates in the database.
  - **Verification**: A one-to-one match requiring the user provides identification such as a PIN and valid ATM card in addition to the biometric sample.

VI. CONCLUSION

The design based on biometric fingerprint authentication takes the advantage over the existing system in terms of reliability and security to customer's satisfaction. Another advantage is that it confirms the identity of card owner which is not specific with the password entry in existing model.

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AUTHORS

Dhananjay Kumar Tiwary is final year engineering student at Bharath University in Chennai, Tamilnadu (India). He is specialized in Electronics and Telecommunication engineering.

Chandan Kumar is final year engineering student at Bharath University in Chennai, Tamilnadu (India). He is specialized in Electronics and Telecommunication engineering.

Amit Kumar is final year engineering student at Bharath University in Chennai, Tamilnadu (India). He is specialized in Electronics and Telecommunication engineering.

Ms. Arul Selvi is working as Asst. Prof. in Department of Electronics and Telecommunication at Bharath University in Chennai, Tamilnadu (India). She has teaching experience over 10 years and she has specialization in the field of Embedded System and Cellular Communication.