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A Survey on Smart PSDM Card

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ABSTRACT: This paper explains the use of RFID technology. In this a single RFID smart PSDM card serves as all in one card for Passport, Smart Parking, Driving License and Medical details. The Smart PSDM Card project is a large scale microcontroller based system. This paper also throws light on optimal security method like Biometric Authentication using Human ears.

KEYWORDS: ATMEGA 64, RFID Tags, ROI, Ear Authentication, Canny edge detector

I. INTRODUCTION

This system is a project for governmental purpose. Radio-frequency identification (RFID) is a technology to record the presence of an object using radio signals. Radio-frequency identification (RFID) is the wireless use of electromagnetic fields to transfer data, for purposes of automatically identifying and tracking the objects/tags attached to objects. RFID is not a replacement for the barcoding, but a complement for distant reading of codes. RFID technology are gaining more popularity than barcodes as RFID technology overcomes the disadvantage of barcodes to be in line of sight for scanning. We are trying to implement a system which makes the use of a single RFID card as Passport, Driving License, Medical details and Smart Parking. A single card can be used for Identification and Authorization. Smart PSDM is the advanced version of existing Aadhar card. This paper also includes the discussion about the drawbacks in the existing system and way to overcome these drawbacks.

i. **Passport**

The existing Passport system is booklet which mainly deal with the issue of VISA. The another important drawback is that when the pages get over in the passport we have to go for renewal of new one but in this SMART PSDM CARD passport system we don't have to issue a new one as there is no pages involved in this card, there is no chance of getting over with the pages for visa.

ii. **Driving License**

In traditional system along with Driving License Registration certificate, Taxation certificate, Insurance certificate, PUC certificate, Road permit and fitness certificate. No need for carrying many documents.

iii. **Smart Parking**

It includes automating the car-parking payment facility where the RFID card will first check for the available balance in the card and will deduct the parking charges from the available amount thus reducing the risk of escaping and it will also reduce the problem of tender exchanges in the parking fee gates and also reduce the problem of carrying cash.

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iv. Medical Details

Patients will no longer need to fill out their personal information each time they visit their doctors. In case of emergency/ accident this card will help to get the details about the patient. The card will maintain a record of clinical history such as blood pressure, pulse, and disorder or disease history etc.

II. BIOMETRIC AUTHENTICATION USING HUMAN EAR

Ear Biometrics is the science of identifying or verifying the identity of a person based on physiological or behavioral characteristics. Biometrics identification methods have proved to be very efficient, more natural and easy for users than traditional methods of human identification. The use of the ear has certain advantages over other Biometric based authentication methods like it is passive. Unlike the fingerprint and iris, it can be easily captured from a distance without a fully cooperative subject. Unlike the face, the ear is a relatively stable structure that does not change much with the age and facial expressions. The shape does not change due to emotion as the face does, and the ear is relatively constant over most of a person's life. Ear authentication can be done using two methods Edge detection and Point detection. We will be implementing using Canny Edge detection.

III. RELATED WORK

The Indian government's AADHAAR card is a unique identification Project which is being prepared by INFOSYS TECHNOLOGIES.

1. Uses of Aadhaar card

- i. Aadhaar based Direct Benefit Transfer (LPG Subsidy): The 12 digit individual identification number on Aadhaar card is used to get LPG subsidy amount directly in the bank account. This DBTL scheme is named as PAHAL. To get this benefit you need to visit your area's distributor and get Aadhaar number linked to the 17 digit LPG consumer number. Although now you can get direct benefit transfer by linking bank account to the LPG number.
- ii. Jan Dhan Yojana: The Guinness world record holder scheme Pradhan Mantri Jan Dhan Yojana (PMJDY) accepts Aadhaar card/number as the only document sufficient to open the bank account. Although you open PMJDY account after producing other documents as well. The benefits offered are RuPay card, free zero balance savings account, life and accident insurance and many others.
- iii. Passport in 10 days: If you have an Aadhaar card, you can get passport in just 10 days. Under this format, police verification will be done at a later date as opposed to the previous rule requiring police verification which used to be time consuming. Also under the new government's rule, if you need a passport, Aadhaar number is compulsory.
- iv. Digital Locker: Government of India has launched digital locker (DigiLocker) system for everyone for storing all personal document on the government's server. And sign-up process for DigiLoc.

2. Problems in Existing System:

- i. During election time It takes more time to type 12 digit number and it may be difficult for illiterate person to type 12 digit number because of lack of proper usage.
- ii. During Election, there are possibilities of misuse of illiterate person's vote.
- iii. It is not possible to cover those population who does not have any ID cards and people like scheduled castes and tribes, socially backward people etc.
- iv. Aadhaar also covers infants but as we all know infants do not know the use of card therefore there is possibility of misuse and troubles from terrorists.

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- v. It is for infants also, but when they grow up say after 15 to 30 years of age. Their finger prints, iris image also changes hence it is not for lifetime card.
- vi. If we want any urgent information, have to get that from Delhi only, but it takes more time and it is difficult to access information for the people who are far away from Delhi.
- vii. If Government requires information of a person then they have to contact to Delhi. Ex: Police station, RTO office, Airport etc.
- viii. It does not include swapping system.

3. Passport

The Consular Passport & Visa (CPV) Division of the Ministry of External Affairs, functioning as the central passport organization, is responsible for issuance of Indian passports to all eligible Indian citizens. Passports are issued from 37 locations across the country and 162 Indian missions abroad Types of traditional passports are

- i. Regular passport (Deep Blue/Black cover) - Issued for ordinary travel, such as vacations and business trips (36 or 60 pages)
- ii. Diplomatic passport (Maroon cover) - Issued to Indian diplomats, top ranking government officials and diplomatic couriers.
- iii. Official passport (White cover) - Issued to individuals representing the Indian government on official business.

In addition, selected passport offices in India as well as overseas missions are authorized to issue Regular Indo- Bangladesh passports and Indo-Sri Lankan passports, to Indian nationals resident in West Bengal, the North Eastern States, Tamil Nadu and Pondicherry. These two passports permit travel to Bangladesh and Sri Lanka only and are not valid for travel to other foreign countries.

IV. SYSTEM DESCRIPTION

1. Block Diagram

It consists of the RFID reader which will be connected to the Atmega 64 microcontroller kit with the help of UART and the UART is also connected to the PC/ LAPTOP and the PC or Laptop will execute the software part and show the forms and in that part only we can use the different modules and can entry the data and keep the updates and in this was the project work out.

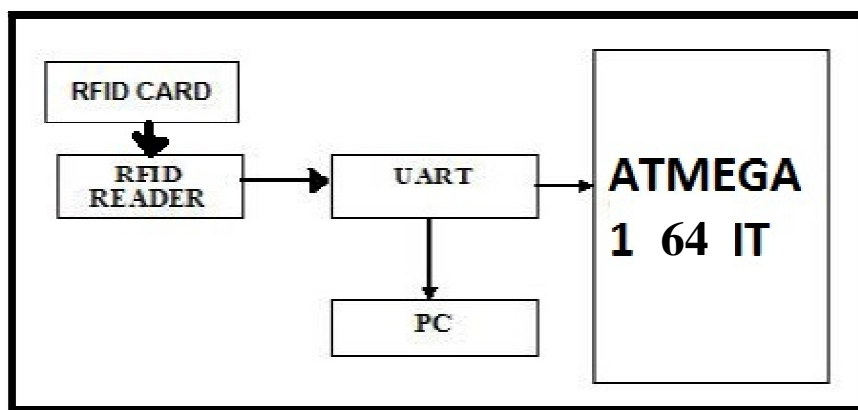


Fig 1: Structural Block diagram of implementation of SMART PSDM CARD

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2. Working Model

The system works as the user is first checked for authorization and if the authorization is correct then only the access will be provided to the user. This authorization is done with the help Ear recognition. In case of Medical Details, this authorization is not required. As in case of an emergency it will not be possible for any user to provide authentication. Thus this module does not need authentication at all. But the other modules will need authentication as for the security reasons. So that the passport and driving license details are safe and there is no unauthorized or illegal use of those details and in case of smart parking also for keeping our e cash safe we have the password facility so that in case of lost card or theft, there should not be any misuse of the card and so this will help to keep the details safe and secured.

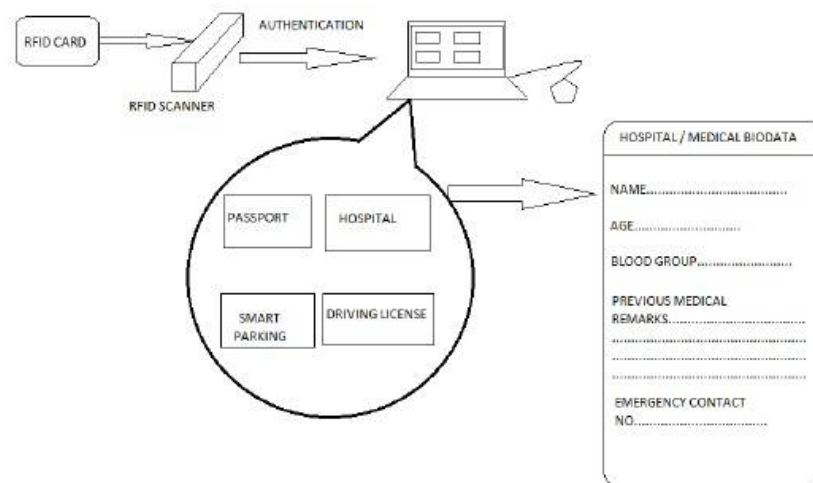


Fig 2: Working Model of SMART PSDM CARD

The above shown diagram is a working model. It shows how the RFID SCANNER reads the RFID TAG/CARD and the signal is given to the PC. The computer displays four modules which are shown in above diagram and a demo is shown, when we click in the Hospital button it will display another form which will be like the above given demo which will have all the necessary hospital details and all. The same way it will work for each and every module.

3. Ear Recognition

The cardholder presents a biometric sample and the system tries to identify the cardholder from a database of stored biometric samples. This process involves several steps from acquisition of the image then the photo is processed, stored and used for the identification process. For every individual, there are some distinct features that are used for identification. The portion that contains these unique features is known as the Region of Interest (ROI). Feature extraction is done to filter these unique data out of the raw data and combines them into the biometric feature. After the feature extraction, authentication is performed based on simple comparison between a new input image and an already existing one which is stored in database.

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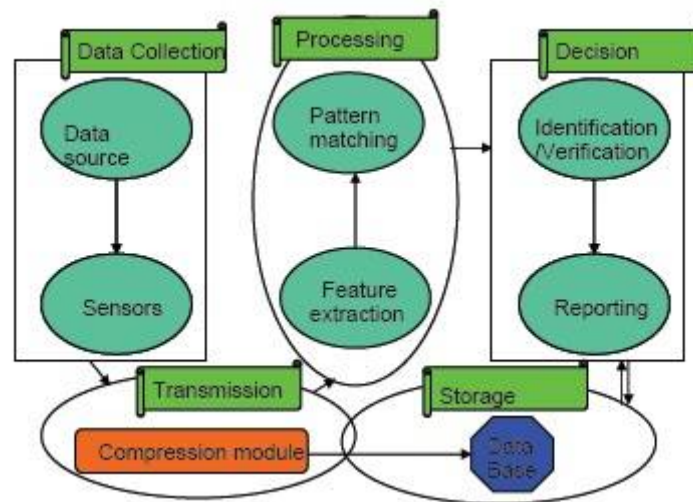


Fig 3: Ear Recognition Process

V. CONCLUSION

This survey paper describes the design and working of a system which would be useful for every individual as a single RFID card serves as Passport, Driving License, Medical details and Smart Parking. The card can also be used as for identification of a cardholder. The traditional system uses separate booklet or card for each of these modules. The Aadhaar Plus card can be used for all the above purpose as well as security is also provided to all the modules except medical details which is done with the help of ear recognition.

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