India Card for Securing and Estimating the Nation

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Abstract: INDIA- Integrated National Dwellers Identity and Authentication (INDIA) card is designed with utmost care to protect the nation from intruders and also to protect the nation's economy. This card involves the details of the citizen with Date of birth as the Public key and the digital key extracted from the palm vein- a biometric trait along with two other biometric trait, palm print and hand geometry. The encrypted data is to be watermarked in the face image and finally stored in the smart card. This card also facilitated the Global positioning system to trace the people's location. This card is to be used in the citizen's transaction right from the lower level i.e from grocery purchase, Electricity bill, Ration purchase etc. to high end purchases like land, building, and business investment. The returns / profits earned are also accounted since the bank accounts are tracked over through the card.

This card implementation would provide better security to nation's people and economy.

Keywords: *Smart card, INDIA, encryption, Palm vein, Palm print, Hand geometry.*

Introduction: National security is on high demand. A person from abroad has no identity of his stay or movements within the country. Person boarding INDIA is at no instance traced for their presence or their day to day activities. Even if they are involved in illegal activities against the nation's security, it might not be predictable by the security forces to track on the activities that have been carried out against nation's security. Even, Indian citizens are untraceable for their illegal movements. Also Income for the country, as a partial contribution from individual is being hidden by many citizens is well-known to everyone nowadays. This income based tracking of an individual in transaction involving lump sum amount. The transactions which involves amount above a certain limit fixed by the government as average income per day of the country are to be made only by providing the card which updates the citizen's transactions for solving monetary issues.

Thus to implement the project, the following activities are to be taken up:

1. Develop an integrated Biometric system which scans the three biometric traits and stores them in individual databases as templates [2].

2. Design an Encryption principle of a biometric trait and watermarking technique of encrypted biometric trait with the face image [4].

3. Calculation of monetary sources and expenditure for the purpose of tax deduction.

4. Design a tracking system to find the position and movement of the individual.

5. To develop a smart card architecture to identify and authenticate the users ie. The citizens [3].

It is envisaged that the private and government sectors including shopping malls, Jewelry shops, Banks, ATM centers, SIM card sales centers, Land registration office, Employment office, Election office, Taluk office and other sectors, where illegal activities may rise are to be integrated under the supervision of the government, in order to build security and to track the individuals status of income-expenditure and also his location in case of detected crime.

1. Existing System

1.1. International status

a. UAE [6]**:** Technologies used in the biometric ID card includes Biometrics, Public Key Infrastructure (PKI), and Smart ID Cards. The Biometric entity used is a Fingerprint biometric captured for 10 prints and Palm vein, the 4 best fingerprints data on card chip. The PKI used provides confidentiality, Integrity, non-repudiation, and authentication, Infrastructure for CA, certificate repository and CMS. PKI is also used to authenticate servers and users of the system with PKI services for the population. Two certificates are used one for

authentication and another for digital signature. Encrypted messaging makes the future use for confidentiality. It also uses one user pin. PKI is activated upon user's request on card delivery. The Smart Cards use ISO 7810, 7816-1, 7816-2 compliant, which is used as an ID card to proof the person's identity. Each person is identified by a unique 15 digit number with Country code (3), Birth date YYYY (4),Random number (7), Check Digit (1) as in eg. 784 2005 1234567 9. This card is to be used for e-commerce and e-government applications using PKI and biometrics. The ID card is valid for 5 years. The technical specification of the smart card includes Java-based OS, 32 KB EEPROM, 136 K ROM, crypto co-processor, Multifunction and PKI ready, Applets: ROM:ID+PKI,EEPROM: MoC. The card contains person's data, portrait, 4 fingerprints data, certificates and private keys. This is compliant with Java Card 2.1.1 & GP card specs. V2.0.1.Four data containers are provided for e-purse, labor, health and defense.

b.UK[6]**:** Biometric Residence Permits(BRP) is a credit card sized immigration documents contain a highly secure embedded chip and incorporate sophisticated security safeguards to combat tampering. It contain the holder's unique biometric identifiers (fingerprints, digital facial image) within the chip; and display a photo and biographical information on the face of the document and details of entitlements, such as any right to work and/or access public funds.

All applicants aged six or over are required to give their biometrics. These will be scans of all fingerprints and a digital photograph. Applicants who are under six are not required to provide their fingerprints. The biometric residence permits design is set by European Union (EU) regulation. It is a standard credit card size (86mm x 54mm) and looks similar to biometric residence permits issued by other EU countries. The permit is made from polycarbonate plastic and contains a chip to make it more secure against forgery and abuse.

1. Holder's digital image
2. Holder's name
3. Valid until – the date the permit expires. This date is at the end of the time the holder is allowed to stay; or five or 10 years if the holder has been given permission to settle in the United Kingdom (known as indefinite leave to remain)
4. Place and date of issue – this is the UK followed by the date the permit was issued
5. Type of permit – this is the immigration category the holder is in (for example, STUDENT)
6. Remarks – these are the immigration entitlements for the length of the

Holder's stay, and may continue on the back of the permit

7. ZU1234567 – unique permit number
8. Holder's signature
9. Biometric chip
10. Holder's gender
11. Holder's date and place of birth
12. Holder's nationality
13. Remarks – this is a continuation of immigration entitlements for the length of time of the holder's stay (see 6 above)
14. Machine readable zone (MRZ) – this area allows information printed on the permit to be read quickly by machine

The International Civil Aviation Organization 'chip inside' symbol, found on the front of the permit above the holder's image, is printed using Optically Variable Ink (OVI). As the permit is tilted, the OVI shifts color depending on the angle of viewing, whilst displaying a metallic quality.

Two color Ultra Violet design – the angle of the design is different on the front and back.

Dynaprint – from one angle, the „valid until" date and the letter 'U' are visible; tilting the permit replaces these with a photograph of the holder and the letter 'K'.

Tactile feature – the back has a raised design incorporating the four national flowers of the United Kingdom, seen by shining a light across the permit.

The Permit number is unique.

Kinegram™ – various designs can be seen as the permit is tilted, showing a distinctive color change and large amount of fine detail.

1.1.National status

a.Aadhar [6] **:** Unique Identification Authority of India has proposed a card which is under process of enrollment in India, which covers enrollment of Face, Fingerprint and Iris. The face record covers the scan of Full frontal, 300 dpi scan resolution of a 24 bit RGB image with Inter-eye distance as key point of identification. For enrollment of Fingerprint the scan resolution is 197 pixels per centimeter and a scan resolution of 500dpi. Apart from the biometric entities, it includes details of the card holder like Name, Date of Birth, Gender, Residential address, Father's/ Husband's / Guardian's Name, Father's/ Husband's / Guardian's UID, Mother's/ Wife's/ Guardian's Name, Mother's/ Wife's/ Guardian's UID, mobile number, E-mail address.

It could be noted that none of the above has carried out any experimental verification of the integrated smart card development. Moreover, the proposed project stands out mainly in the following ways:

1. Income tax calculation based card.

2. Avoid bribery in any mode.

3. Avoid insecure status in the country.

4. Avoid illegal activities of people inside and outside country.

2.Proposed System

The requirement of prohibiting illegal attacks and abnormal activities in the country has led to increased level of security provision in the Borders and allocation of much striking forces whenever, even democratic activities like election are to take place. Even though many steps are being under process and some are implemented, there is still a notion secure less feeling among people even to travel around the country. Even though, Information Technology (IT) has revolutionized warfare and in the internal security field it has provided means to the underworld to expand their reach for criminal activities without direct physical involvement, Cases that happened in the near future like Mumbai attack, Delhi rape and many unrevealed led to the design of such a project to enhance the nation's security. This deficiency has motivated researchers from many countries to introduce and even to implement them in their nation.

2.1.Novelty Importance of the proposed project in the context of current status

It is certain that people in the country and now insecure even to move of their homes. In order to provide security for people, country and government from illegal activities, movements within the country this proposal implementation might be quite helpful. The proposed card would include its necessary at all places of transaction wherever crime may be initiated. For instance in the purchase of goods or items or grocery above certain limit of amount, SIM card purchase, Mobile purchase with IMEI code, Train / Flight/ Bus booking, Pilgrimage entrance tickets, Gallery entry, Hotel bookings, Internet browsing and restricted environments. The demand for security mechanisms is increasing day- by – day. With the steps of Indian government, Aadhar card has taken its part in the country to solve several issues. Apart from these solved issues, there are also some other problems which involves security lack, Monetary issues. Also several smart cards for providing compatibility to their government are in existence in abroad countries. Biometric cards are also of peak importance today, since the citizen themselves acts as the password for their access or authorization.

In this project, development of a smart card which involves tracking of the movement of each and every citizen in all aspects is to be made. The model involves the registration of the citizen's biometric traits like Palmprint, Palmvein and Hand geometry [5]. These biometric traits after undergoing technical processes like encryption and watermarking are merged into a visible face image, which is then stored in the space specified token[3]. This smart card also involves the Global positioning system, wherein these smart cards may be used as identity cards, Authentication card, ATM cards, Purchase cards, Ration card, and many more. This single smart card may involve up to 25 identity cards, which are now spread out for various purposes. A citizen owning this single INDIA card registers himself with the governmental activities like tax payment, PAN card, Election card, Population census, and many.

2.2.Definition of the problem

The primary problem is to investigate the applicability and efficiency of the proposed system for biometric data integration [4]. The algorithm is developed for feature extraction and template generation of individual biometric traits, from which one of the biometric template is to be used for generating key that is to serve as private key and the date of birth as public key. Using these Private and public key, the encryption algorithm is used to encrypt a biometric trait that is in turn to be watermarked into another biometric trait.

These traits are to be used together in the process of enrollment of citizen. Hence the smart card which contains the face image is embedded with the encrypted Palmprint and the Palm vein that is used for key generation to encrypt the Palmprint. Note that the key generation from Palm vein was not available except that of other works.

The entire process is split as Enrollment and Verification/Authentication phases. The feature extraction algorithm for fingerprint has been used as that of Raymond feature extraction algorithm [1]. Features of Hand geometry are extracted and stored in the database that enables user authentication or verification as a matching process. The features of Palm vein is extracted using proposed algorithm[2]and key is generated using Palm vein key generation algorithm [5] which has been the sole proposal. The watermarking and encryption algorithms are to be analyzed, in order to use them to yield higher efficiency.

The objective of the proposed system are:

a. Propose a better feature extraction algorithm for Hand Geometry and Palm print if efficiency could be raised.
b. Implement the simulated key generation and encryption algorithm to analyze the results and make improvements in the algorithm if needed.
c. Implement the idea of integrating multiple cards with minimum population or restricted to a campus environment.

4. Results and Conclusions

The card have been implemented in a preliminary stage of a college campus and is to be extended the university level or a rural area applicable.

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