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ESIC - EMBEDDED SMART ID CARD BASED ON ANDROID PLATFORM

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Abstract: - Authentication strategies have been suggested from various researches since from many years. The fully satisfied altitude with authentication & authorizations infrastructure (AAI) is not yet done using the reliable identifications card. I.e. The current era implemented in most of the fields are based on paper approach and is followed for gesticulate as an authentications. The occurrence of Embedded Smart ID Card (ESIC) interfacing with android platform is proposed. Designing smart card with biometrics connected through wireless communications and interface to android phone/laptop. The card should be deliberate by 32-bit RISC secure microcontroller with EEPROM; Material of card body can be PVC/ PET/ Polycarbonate with biometric features Connected through Wi-Fi/Bluetooth to Android phone/laptop through android app or through windows app respectively.

Keywords: - Authentication, Embedded System, Android, Biometric, EEPROM.

I. INTRODUCTION

The global biometric markets will be value \$23.54 billion by 2020 & have a composite annual grow rate of 17.6%. The report also investigates for the different applications biometric such as government Banking and finance, travel and immigrations, defense, consumer electronics, home security, commercial security, voting personnel ID, License building access, Border access control, detections of explosive at the airports. List of the examples are as follows.

- SIM activation in Pakistan after biometric matches by Pakistan Telecommunication authority by 2014
- Fujitsu biometric palm vein access control by Fujitsu frontech North America by 2014
- Singapore Immigration Automated Clearance System
- Canadian Airport Restricted Area Identification Card
- Amsterdam Schiphol Airport
- University of Arizona Keyless Access Security System

The research issues allied with unauthorized access was discussed and incredible research had been done for varies stage. But still the research involves to forestall the unauthorized activity in varies levels and are not discussed much with efficient solutions using identification card with biometric. This biometric match-on-card approach can afford an even more private and secure identity verification system using a card. A trusted credential for authenticating in smart ID with biometric.

Over the time we have seen that the process of manual attendance at present has been carried out across almost all educational institutions. The process is time overwhelming as well as sometimes inefficient resulting in the dishonest marking of attendance. An Embedded System is a combination of computer hardware and software, and perhaps additional mechanical part designed to perform a specific function

The upholding and supervision of student information is almost a tiring process in the educational institutions nowadays. Therefore an effective system for the management of student academic information such as their Attendance, Curriculum performance is must. Furthermore the students also need to be updated of their performance periodically for their change for the better in the academics and that should be reported to their respective parents or guardians. The workload of the lecturers is huge when handling subjects for more than one classes. In the traditional way, first the attendance of all the students is recorded manually in a log book called as attendance register and then entered for a second time in a desktop application. The alike procedure is followed for recording the marks for every internal exam. Generation of reports on the information by means of such system is a tedious process which may frequently result in errors.

Today, we essential not to maintain pen and paper based attendance registers. There is no need for the files/records to be maintained by the faculty members and also it reduces the racket space require to hold the records of the students. Whereas the reports can be generated within a fraction of seconds and the accuracy of the data are very much acceptable.

Overview on Biometric Technology

General term used to describe characteristics or a process. It is a measurable biological and behavioral character that can use for automatic identification. Can also be called as the automatic recognition of individual based on biological, physiological and behavioral characters.

Some of the biometric technologies are like face recognition, retina identification, finger print authentication, heart beat observation, vines recognition, hand geometry, voice, Vascular, signature, facial thermograph, gait and many more which helps in providing an secured authentication & authorizations infrastructure which is the main goal of my project.

Finger Print Technique

There are three basic patterns of fingerprint ridges are the arch, loop, and whorl. In The arch pattern ridges enter from one side of the finger, raises in the center forming an arch and exit at the other side of the finger. In the loop pattern the ridges enter from one side of the finger, form curve and exit on the same side. In the whorl pattern the ridges form circularly at the center point of the finger.

Is a device which receives and responds to a signal when touched. A sensor's sensitivity indicates how much the sensor's output changes when the measured quantity changes. Sensors that measure very small changes must have very high sensitivities. Technological progress allows more and more sensors to be manufactured on a microscopic scale as micro-sensors using MEMS technology. In most cases, a micro sensor reaches a significantly higher speed and sensitivity compared with macroscopic approaches.

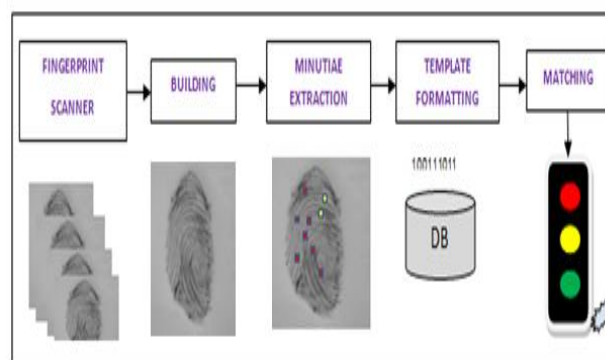


Fig 1 Finger Printing machining process.

II. RELATED WORK

Many a kind of methods and principles have been applied to monitor the attendance system in the education sector. A system providing an improved electronic card and card reader serially interfaced to the

digital system was proposed, which is an electronic computer based attendance monitoring System (Shoewu, O. O. M. Olaniyi, and Lawson et al, 2011)

A wireless attendance management system used the iris of the individual for authentication (Kadry, S. and M. Smaili et al, 2010). This will capture the images of iris, storing and matching used an off-line iris recognition management system.

Authentication of the individuals for attendance management has been carried out with the help of passwords. The implementation of the system which uses the password is designed (Cheng, K., L. Xiang, T. Hirota, and K. Ushijimaa et al, 2005), but, here the password may be forgotten at any time or the password may be shared by anyone or tampered.

Attendance monitoring system using biometrics system as a mode of authentication and marking the attendance of the students. Authors in (Shoewu, O. and O.A. Idowu et al, 2012) designed and implemented a system.

RFID system has been used to develop an attendance and monitoring system. RFID where it consists of two components tags and readers which helps in enabling the data transfer. The two forms used establishing the communication between the hardware and the software are: Start Listening and Stop Listening. It consists of database and all the process is done by using queries created within the application during the development phase (A. Kassem, M. Hamad, Z. Chalhoub and S. El Dahdaah et al, 2010).

III. EXISTING SYSTEM

Consider the system as shown in the Fig.4 pen and paper based attendance registers. Here in the above system the workload of the lecturers is huge when handling subjects for more than one class. The process is time overwhelming as well as sometimes inefficient resulting in the dishonest marking of attendance. There is a need for the files/records to be maintained by the faculty members and also it increases the racket space require to hold the records of the students.

Fig 2 Pen and paper based Attendance

IV. PROPOSED SYSTEM

Various methods and principles have been applied to monitor the attendance of the students in the educational institutes. A system providing a sophisticated system for an educational institutes which is help full in the administration section, library section, placement section and also in the attendance and student progress record maintenance infrastructure with an improved embedded card is proposed.

In the existing system the attendance marking system is time consuming and hence we proposed a system in which the marking of attendance in real time by the students themselves without cheating on lecturers by putting proxies. And also the college/school ID card itself is an attendance marking device which will always be with the students, whenever the lecturer triggers the ID card through the android or windows application which is downloaded on their respective tabs or PCs. The name given for this attendance marking system is named as ESIC (Embedded Smart Identity Card).

System Architecture

The System architecture of the proposed system is as shown in the figure below.

This proposal is relevant with the stream of Government exams, Academic, Industry, technology and society.

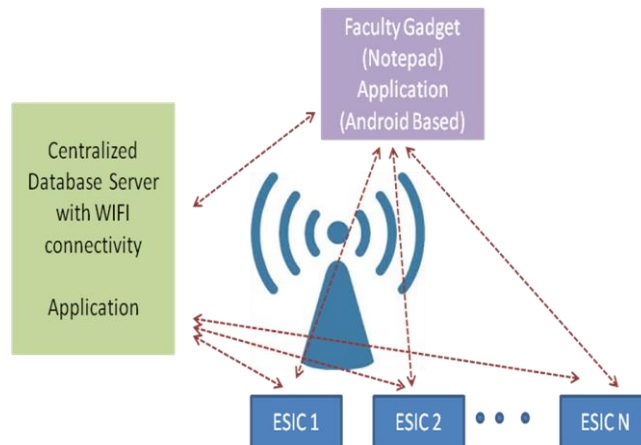


Fig 3 System Architecture

Any security & Authentications related issues resulting in fraud have the potential to undermine confidence .keeping in this view authentication & authorizations infrastructure (AAI) can be developed by using this card. i.e. The faculty members are sending announcement in their class activity like Assignments, Exam application form issuing ,library books pending details, accounts pending details ,Hall ticket issuing & collection dates, Announcement of company placement , immediate alert message.

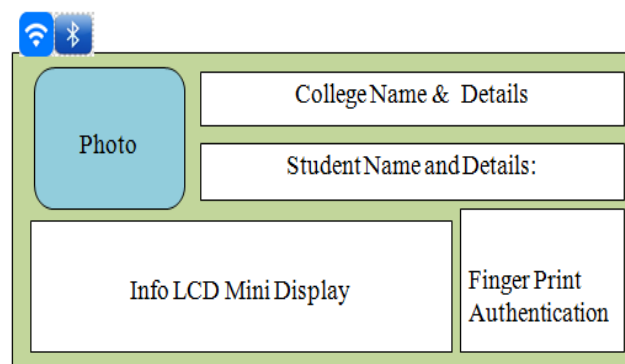


Fig 4 ESIC card

The announcement with acknowledgement from the students using a finger print authentication. The students are in that offline can verify their embedded smart id card details with touch screen system using Wi-Fi which has to keep in college campus. This research issue mainly focused on authentication & authorizations infrastructure (AAI) is not yet done using this Smart ID.

Our proposed method in ESIC consists of following applications in any particular educational institutes:

- Attendance monitoring.
- Academic information's such as:
 - Student Account status management.
 - Library session.
 - Placement cell announcement.
 - Exam sectors.
 - Student progress monitoring.

System Flow:

Faculty will download the application into their respective tab and start the application by login through their username and password; if the password is valid then faculty goes to the option page which consists of two options one is the attendance and other one is information icon.

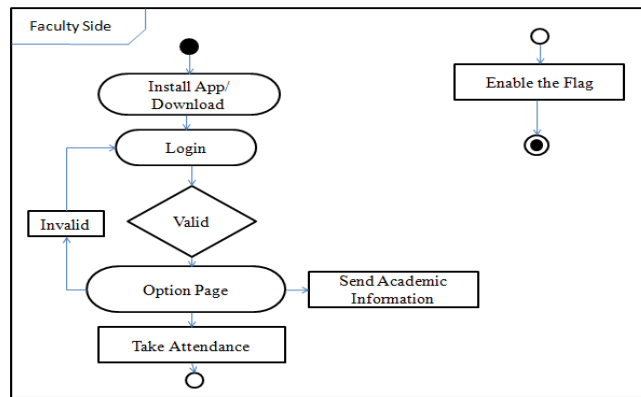


Fig 5 Flow diagram of faculty side

The faculty should enable the attendance flag to allow students to mark the attendance and also the faculty can send the information regarding assignments, propone or postpone of the classes, placement details and soon the faculty should enable the attendance flag to allow students to mark the attendance and also the faculty can send the information regarding assignments, propone or postpone of the classes, placement details and soon through the fingerprint authentication the student can mark the attendance and also can access the important information of the current activities in the college.

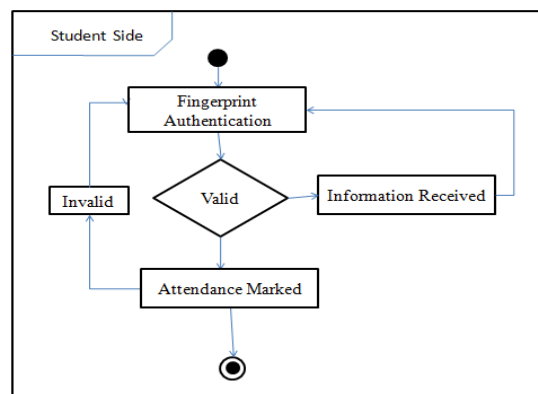


Fig 6 flow diagram of student side

V. RESULTS

Scenario 1: The academic events from the placement cell, library, exam sectors, and student account status management, student progress monitoring can be done and the scenario is as given below:



Fig 7 Sending Event Messages on to the ESIC Card by the Faculty members and chef officers of the particular department in an institute.

Scenario 2: Open up page for the authorized Faculty members and chef officers of the particular department in an institute.

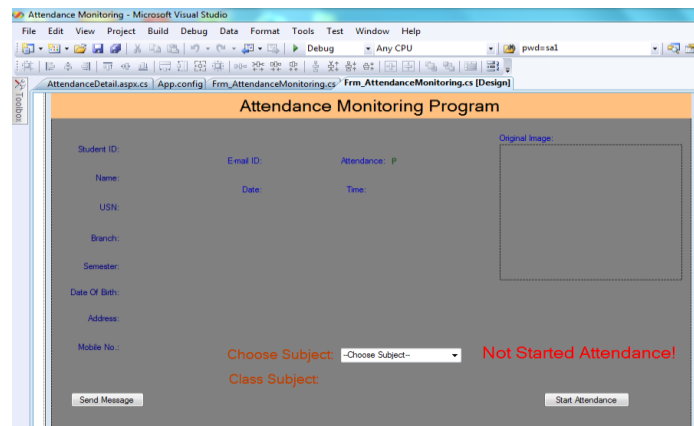


Fig 8 Attendance monitoring system

VI. CONCLUSION AND FUTURE WORK

In this project, match-on-card biometrics method can provide more security and private identity verification system using an ID card. A trusted credential for authenticating in smart ID with biometric in the stream of academics. Admin, Examination section, Placement, library sections are communicated the students immediately with authentications and acknowledgement. Examination sections can easily authenticate the students. Report generated easily & Very less paper work has it is a real time data. Timely communication with authentication, as well as acknowledgement. Reusability of card among the new and passed out students.

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REFERENCES.

- [1] Akshay A. Kumbhar^{Å*}, Kunal S. Wanjara^Å, Darshit H. Trivedi^Å, Anay U. Khairatkar^Å and Deepak Sharma^Å"Automated Attendance Monitoring System using Android Platform" published in research article of International Journal of Current Engineering and Technology 2014.
- [2] HemaSubramaniam, Marina Hassan, SetyawanWidyarto"Bar Code Scanner Based Student Attendance System (SAS" in research Gate 2013.
- [3] K. Akhila, B. Prathyusha, M. PavanKumar, M. Amrutha"A Novel Approach Of Mobile Based Student Attendance Tracking System Using Android Application" Published in: International Journal of Engineering Research & Technology 2013
- [4] "Student Attendance Tracker System in Android" Miss. Namrata N. Shahade, Department of Information Technology J.D.I.E.T., Yavatmal, Maharashtra, India, Miss. Priya A. Kawade, Department of Information Technology, J.D.I.E.T., Yavatmal, Maharashtra, Indis, Mr. Satish L. Thombare, Asst. Professor of Information Technology, J.D.I.E.T, Yavatmal, Maharashtra, India,2012.
- [5] "An Effective Approach Using Combination of Electronic Identity Card (EIC) Systems and Fingerprint Authentication for Automated Student's Attendance Program" Mr. Bhargav B. Patel, Mrs. Suchita B. Patel Assistant Professor, M.Sc. (IT) Department, ISTAR College, V.V. Nagar, Gujarat, India,2010.
- [6] ZatinSinghal Rajneesh Kumar Gujra "Any Time Any Where- Remote Monitoring of Attendance System based on RFID using GSM Network published in International Journal of Computer Applications 2013.
- [7] Jonathan Sidi, Syahrul N. Junaini, Lau S. Ling" ISAMS: Tracking Student Attendance using Interactive Student Attendance Management System" published in Research Gate 2013.
- [8] Kassim, M. ; Fac. of Electr. Eng., Univ. Teknol. MARA, Shah Alam, Malaysia ; Mazlan, H. ; Zaini, N. ; Salleh, M.K." Web-based student attendance system using RFID technology"Published in:Control and System Graduate Research Colloquium (ICSGRC), 2012 IEEE.
- [9] Lim, T.S. ; Fac. of Eng. & Technol., Multimedia Univ., Ayer Keroh, Malaysia ; Sim, S.C. ; Mansor, M.M."RFID based attendance system "Published in:Industrial Electronics & Applications, 2009. ISIEA 2009. IEEE Symposium on (Volume:2) 2009..