RESEARCH ARTICLE   OPEN ACCESS

Cloud Based Automatic Attendance Monitoring System Using RFID And IOT

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ABSTACT

 If we talk about the current scenario of our education system then we get to find that we have lot of technologies to use but still we are following the traditional system. If we talk about the old attendance systes in universities and schools, lecturers do that work manually. Lecturers take the atendance and update it manually in the database. When we talk about the technology, then we found that there are so many tools to use and reduce the burden of lecturers in schools and universities. Using RFID is the one example of that. We if will combine the RFID and IOT (Internet of Things) then we can do it automatically and there is no need to do it by lecturers. Here we are planning to use the Cloud as storage for better performance. Using IOT and Cloud, we can access it from anywhere and anytime which will provide us the better proficiency and flexibility. Conventional methods of using Barcodes that requires line of sight, pricing discrepancies, scanning problems, label damage, financial and equipment cost causes inaccuracy in entering the information and barcode scanners eventually breakdown causing scanning problems. Therefore, Radio Frequency Identification (RFID) technology is propose that uses radio waves to transfer from an electronic tag called RFID tag, attached to an object, through a reader for the purpose of identifying and tracking the object. RFID technology is known a matured technology, which is widely deployed by several organizations as a part of their automation system. In this study, an RFID based system will be propose in order to produce a compact and reliable smart security system using RFID and face verification. The RFID system identifies the student name and unique information using the RFID card and further identity verification of the student is carry out using face recognition technique. RFID uniquely identifies the student based on the card number, then simple face detection algorithm is used to verify face of the students using face image of the student. The performance of the system is carried out with RFID code and face recognition.

Keywords: IOT Technology with RFID card, RFID reader, Face Detection Algorithm.

I. INTRODUCTION

The most common method of tracking entry of students in the college is the ID cards, which have to be inspect manually, for a college of larger strength, this method is cumbersome and time consuming. Hence, the current traditions of inspecting ID cards manually are unreliable and students effortlessly counterfeit the system. Other reliable methods, which are sparsely using because of the cost of implementation, include the fingerprint recognition system. They offer reliable performance but there are three common issues like false acceptances, false rejections and change in sizes or form/pattern over time. Recently Radio-frequency identification (RFID) based system is significantly use in all the institutions. They are useful for identifying the student but it cannot reliably verify the student who is using it. A student can easily mark bogus attendance for his friend using his card. Then, a secret pin along with RFID is use to verify the student but they too could be easily shared or lost by the students. Hence,

Face recognition with RFID system used the photograph to identify and verify the faces of the individual student. This approach of monitoring system suggests that the face recognition is viable biometric identification of the future. A compact and reliable automated "college gate control" system using face verification and RFID, present in this proposed project. The RFID technology recognizes the students name and unique ID of student using the RFID card and further identity verification of the student carry out using face recognition technique. RFID Uniquely identifies the student based on the card number. The performance of the system, test for frontal face verification. The schematic diagram of the proposed scheme shows in block diagram. The system design identifies the student and verifies the respective student biometrically. It increases the security and accuracy because of two levels of authentication. RFID Systems has evidences to be the smartest way for student identification. Several biometric verification methods of recognition exist

like Iris, Face, Fingerprint, etc. Face verification robust method of biometric verification. RFID System uses the RFID cards to identify the student. Face Verification System uses an individual verify the face of each student exclusively.When the student identifies and is verifies, the gate open. If RFID Card is not able to identify by RFID System then it is rejected reporting unrecognized user. If RFID card identification succeeds and face verification fails, then proxy person is detected and hence identity of fraud student is known. Thus, the system designe gives the foolproof against proxy college entry. The system is flexible enough to suit to different conditions by just sending an SMS to alter the working of it. The face detection method cannot be activating in cases of some functions. RFID student identification system here, every student is providing with an RFID card. RFID cards are assigning a unique 10 digit RFID card numbers by the manufacturer. The card number is only readable and therefore it is mapping to their respective student USN number in a RFID database. Low frequency (125 KHz) RFID card is used which can only detect at a range from the RFID reader. Thus, collisions of RFID0 cards are avoiding. Smart RFID proximity contactless card Reader 125 KHz is used for testing in real-time Students must show the RFID card in front of RFID reader and then it check for a match in the database of card numbers. Then success or failure report by displaying it on the LCD. If success, it proceeds to face verification process. Detection of face is an easy and simple task for human being, but not for computers .It is regarding as the hardest and challenging problems in the field of computer vision due to some large intra-class variations caused by the problems like changes in facial appearance, lighting and expression. Such variations in facial expressions result in the face distribution to be highly nonlinear and complicated in any space. Face detection is the process of recognising one or more human faces in images or videos. It plays an important role in many biometric, security and surveillance systems.

II. INTERNET OF THINGS

Internet of Things is a one of the best dynamic global network organizations with self-configuring capabilities. Based on some standard and interoperable communication protocols In the IoT; physical and virtual things can be identify, physical attributes are there, and virtual personalities and use intelligent interfaces are there. The physical and virtual things are seamlessly integrating into the information network RFID, which is shaping up to be an important building block for the Internet of Things. Radio Frequency Identification devices are mostly wireless

microchips normally used for tagging objects for automated identification RFID systems, which consist of a reading device called a reader, and many tags. The reader is a powerful device with ample memory and computational resources RFID can identify objects wirelessly without line-of-sight. Attendance monitoring system will produce an automatic system, which gives us better routine, and efficiency than the traditional methods of observing student and many more. RFID technologies always help us to identify and to monitor items like (products, people, student, etc) wirelessly within a specified distance (a few centimeters to hundreds of meters). In this paper, here we are describing the proposed RFID system for recognizing and monitoring attendance. In this system, the RFID tags enable the school/college management people to supervise the student movement in and out of the campus. When RFID tags pass through the RFID reader in read range zone, then system will record the data from the RFID tags to the database systems. Laziness on the part of students, nonchalance to schoolwork, extra social activities that have no importance in aiding the objectives of the institution and a lot more, may prevent students from attending lectures. Another side to these, lecturers and administrators in most developing countries had to come up with ways to ensure a healthy participation from students, and make sure that the student-lecturer interactive relationship is keep intact. This in some cases have come in simple forms like roll calls, while in more interesting cases, can be formats like surprise quizzes, extra credit in class, etc. These type of strategies are however, quite time consuming, little stressful and laborious because the valuable lecture time that could otherwise use for lectures is dedicated to student attendance taking and sometimes cannot be accurate.

The Internet of things is widely spread network of physical devices, vehicles, and other items embedded with electronics devices, software, sensors, actuators and network connectivity which enable these objects to collect and exchange data. The IoT allows objects to sense or controlled remotely across the existing network. Infrastructure, creating new opportunities for more direct integration of the physical world into the computer-based systems, and resulting in some improved efficiency, accuracy and mainly in economic benefits in addition to reduced human intervention. As IoT is augmented with actuators and sensors , then technology becomes an instance of the more general class of cyber-physical systems, which also encompasses technologies such as the smart grids, virtual power plants and smart homes, intelligent transportation and smart cities. Each single thing is uniquely identifiable in

its own embedded computing system but it is sometimes able to interoperate within the existing Internet infrastructure. Experts estimate that in future the IoT will consist of about 30 billion objects by 2020. Typically, IoT is expecting to offer an advanced connectivity of devices, systems, and services that goes beyond machine-to-machine communications to the world and covers a variety of protocols, domains, and applications. The interconnection of these embedded devices (including smart objects), is expected to usher in automation in nearly all fields, while also enabling advanced applications like a smart grid, and expanding to areas such as smart cities.

Internet of Things generally represents a basic concept for the ability of network devices to sense and collect data from the enviornment around us, and then share that data across the Internet where we can process it and utilize for various interesting purposes. Sometimes we also use the term as *industrial* Internet interchangeably with IoT. This approach refers mainly to the commercial applications of this technology in the world of manufacturing. The Internet of Things is not limited to industrial applications, however. All kinds of ordinary household gadgets can modify to work in an IoT system. WiFi network adapters, motion sensors, cameras, microphones and other instrumentation can embed in these devices to enable them for work in the Internet of Things.

III. CLOUD COMPUTING

A cloud server is an open logical server which built, host, deliver through a cloud-computing platform through the Internet. Cloud servers maintain and exhibit similar functionality as well as capabilities to a typical server. However, they are accessing reremotely from a cloud service provider as open server. A cloud server known as a virtual private server or virtual server. A cloud server is an Infrastructure as a Service (IaaS) primarily based cloud service model.

There are minly two types of cloud servers: logical, physical. A cloud server is a logical when it delivere through server virtualization. The physical server is distributing into two or more logical servers, each of which has a separate OS, user interface and apps, although they share physical components from the underlying physical server, in this delivery model. At the same time, the physical cloud server is too accessing through the Internet remotely, it is not shared nor distributed. And it is commonly knows as a dedicated cloud server. Cloud computing is an example of an information technology(IT) paradigm, a model for enabling ubiquitous access to shared pools of configurable resources (such as computer servers, storage, applications and services ,networks,), which can be rapidly provisioned with minimal management efforts, over the Internet. Cloud computing is basically allows enterprises with various computing capabilities to store and it process data either in a privately-owned cloud or on a third-party server located in a data center thus making data-accessing mechanisms more efficient as well as reliable. To achieve coherence and economy of scale, similar to a utility cloud computing relies on sharing of resources.

Cloud computing allows other companies to minimize or avoid up-front IT infrastructure costs. On another hand, instead of wasting resources on computer infrastructure and their maintenance third-party clouds enable organizations to focus on their core businesses . Cloud providers coherently use a pay as you model. This might lead to unexpectedly high charges only if administrators are not familiarizing with cloud-pricing models.

In the year of 2009, the high-capacity networks availability, computers of low-cost and storage devices and the widespread hardware virtualization adoption, service-oriented architecture, and autonomic and utility computing mainly led to a growth in cloud computing. Companies can scale up as computing needs first increase and after then scale down again when demands decrease. In the year of 2013, it has been announced that cloud computing had become a highly popular and demanded service or utility due to the only high computing power advantages , cheap cost services, high performance, scalability, and accessibility - as well as availability. Some cloud vendors have the experience of growth rates of 50% per year, but while cloud computing works in a stage of infancy, pitfalls of this are it need to be addressed to make cloud-computing services more reliable and user-friendly.The main purpose we are using cloud here for the data storage as a open server.

Mr.Naveed Khan Balcoh explained that Students attendance in the schools is very necessary task and if taken manually wastes a lot of time. There many automatic methods are available for this attendance purpose i.e. biometric attendance. All such kind of methods also waste time because students personally have to make a queue to touch their thumb on the scanning device.The efficient algorithm that automatically marks the attendance without human intervention is described by this work. Camera attached in classrooms that will continuously capture some images of students.And by using that camera detecting the faces in images and it will compare

the detected faces with database and mark the attendance, and this attendance can record.

The related work in this field of attendance system, describes the system architecture, software algorithm. Camera face detection is a necessary first step in face recognition systems, with the purpose of localizing and extracting the face region from the background. Face detection technique also has many applications.this several applications in areas like content-based image retrieval, crowd surveillance, video coding and intelligent human–computer interfaces video conferencing. However, it was not until recently that the face detection problem received considerable attention among researchers. Face detection is a difficult problem in computer vision, because the human face is dynamic object and it has a high degree of variability in its appearance.