Internet of Things

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Abstract- In this paper, we come to highlight the concept of Internet of Things. In recent years there have been rise in the number of applications based on the Radio Frequency Identification (RFID) system and have been successful functional to different areas as smart transportation, smart health care, agriculture, e-shopping, hospitality and student's attendance monitoring system.

This paper effort is made to solve regular student's attendance monitoring system using RFID technology. It helps to replace the tedious old method and it save the time. This system deals with the maintenance the student's attendance. It generates the attendance of the students on the basis of presence in class. It maintained on the daily bases of their attendance, the staff can provide username and password to each student, it controls target through radio wave. This application takes attendance electronically and records of the students stored in database. By using this technique to improve the quality of education system.

I. INTRODUCTION

The Internet of Things or IOT, refers to the billions of physical devices around the world that are now connected to the internet, all collecting and sharing data. The term IoT is mainly used for device that would not usually be generally expected to have an internet connection, and that can communicate with the network independently of human action. The idea of adding sensors and intelligence to basic object was discussed in 1980's and 1990's, but apart from some early project including an internet connected machine. The IoT integrate the inter connected of human culture with digital information system the internet. The idea is that enterprises should have access to more data about their own product and their own internal system. An IoT device will likely contain one or more sensors which it will use to collect data. Just what those sensors are collecting will depend on the individual device and its task. The IoT generates vast amount of data. From sensors attached to machine parts or environment sensors, or the words we shout at our smart speakers. That means the IoT is a significant driver of big-data analytics projects because it allows companies to create vast data sets and analysis them. That data will come in many different forms – voice request, video, temperature, or other sensors. IoT device generates vast amount of data, that might be information about an engine's temperature or whether a door is open or closed or reading from the smart meter. All

this IoT data has to be collected, stored and analyzed. As the price of sensors and communications continue to drop, it becomes cost-effective to add more devices to the IoT – even if in some cases there's little obvious benefit to consumers. 5G and machine-learning powered analytics – are still themselves at a reasonably early stage of development. There are many competing platforms and standards and many different vendors, from device makers to software companies to network operators, want a slice of the pie. It's still not clear which of those will win out. But without standards, and with security an ongoing issue, we are likely to see some more big IoT security mishaps in the next few years. The internet of things, or IoT, is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction. The internet of things helps people live and work smarter, as well as gain complete control over their lives.

VISION AND CONCEPT

The Internet of Things is making the fabric of the world around us smarter and more responsive, digital and physical universes. The idea is that enterprises should have access to more data about their own products and their own internal systems, and a greater ability to make changes as a result. Manufacturers are adding sensors to the components of their products so that they can transmit data back about how they are performing. This can help companies spot when a component is likely to fail and to swap it out before it causes damage. Companies can also use the data generated by these sensors to make their systems and their supply chains more efficient, the concept is the same as for the consumer IoT devices in the home, but in this case the aim is to use a combination of sensors, wireless networks, big data, AI and analytics to measure and optimise industrial processes. The IoT promises to make our environment -- our homes and offices and vehicles -- smarter, more measurable, and... chattier. Smart speakers like Amazon's Echo and Google Home make it easier to play music, set timers, or get information. Looking beyond the home, sensors can help us to understand how noisy or polluted our environment might be.

Security is one the biggest issues with the IoT. These sensors are collecting in many cases extremely sensitive data -- what you say and do in your own home, The IoT bridges the gap between the digital world and the physical world, which means that hacking into devices can have dangerous real-world consequences. One area of growth in the next few years will undoubtedly be the use of 5G networks to support IoT projects. 5G offers the ability to fit as many as one million 5G devices in a square kilometer, which means that it will be possible to use a vast number of sensors in a very small area, making large-scale industrial IoT deployments more possible. As the price of sensors and communications continue to drop, it becomes cost-effective to add more devices to the IoT – even if in some cases there's little obvious benefit to consumers. Deployments are at an early stage; most companies that are engaging with the IoT are at the trial stage right now, largely because the necessary technology – sensor technology, 5G and machine learning powered analytics – are still themselves at a reasonably early stage of development. An IoT ecosystem consists of web-enabled smart

devices that use embedded systems, such as processors, sensors and communication hardware, to collect, send and act on data they acquire from their environments. IoT devices share the sensor data they collect by connecting to an IoT gateway or other edge device where data is either sent to the cloud to be analyzed locally. Sometimes, these devices communicate with other related devices and act on the information they get from one another. The devices do most of the work without human intervention, the internet of things helps people live and work smarter, as well as gain complete control over their lives. In addition to offering smart devices to automate homes, IoT is essential to business. IoT provides businesses with a real-time look While other uses of IoT technology or the Internet of Things, are concerned with offering an innovative approach to quality of life, urban challenges, food production, agriculture, manufacturing, medicine, energy supply, water distribution and how to offer a wide variety of products and services, an application oriented to maintenance management such as Fractal CMMS, is responsible for helping all these organizations take care of the assets on which their fundamental activity is based.
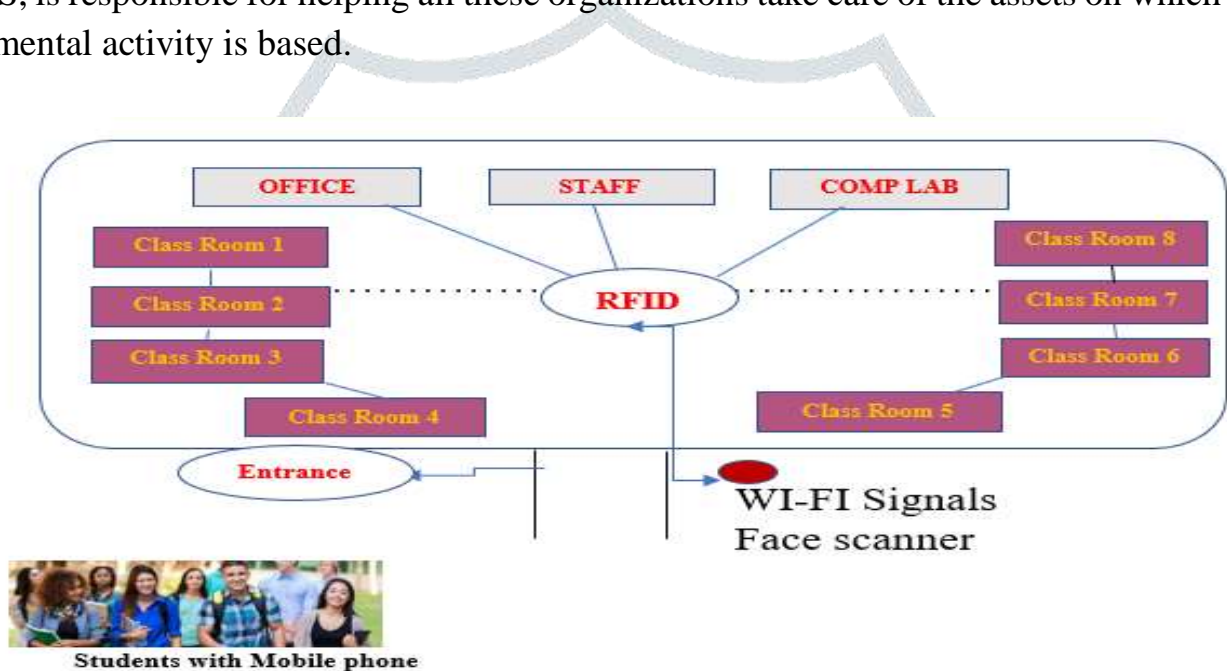
into how their systems really work, delivering insights into everything from the performance of machines to supply chain and logistics operations. Some important field this technology control different process, some of the practical applications of the IoT.

1. **SMART HOME**

With IoT creating the buzz, 'Smart Home' is the most searched IoT associated feature on Google. But, what is a Smart Home?

Wouldn't you love if you could switch on air conditioning before reaching home or switch off lights even after you have left home? Or unlock the doors to friends for temporary access even when you are not at home. Don't be surprised with IoT taking shape companies are building products to make your life simpler and convenient.

Smart Home has become the revolutionary ladder of success in the residential spaces and it is predicted Smart homes will become as common as smartphones. The cost of owning a house is the biggest expense in a homeowner's life.

2. IOT IN AGRICULTURE

With the continuous increase in world's population, demand for food supply is extremely raised. Governments are helping farmers to use advanced techniques and research to increase food production. Smart farming is one of the fastest growing field in IoT.

Farmers are using meaningful insights from the data to yield better return on investment. Sensing for soil moisture and nutrients, controlling water usage for plant growth and determining custom fertilizer are some simple uses of IoT.

3. IOT IN HEALTHCARE

Connected healthcare yet remains the sleeping giant of the Internet of Things applications. The concept of connected healthcare system and smart medical devices bears enormous potential not just for companies, but also for the well-being of people in general.

Research shows IoT in healthcare will be massive in coming years. IoT in healthcare is aimed at empowering people to live healthier life by wearing connected devices. The collected data will help in personalized analysis of an individual's health and provide tailor made strategies to combat illness.

DISCUSSION

Educational institutions have now adopted the use of Information and Communication Technologies to achieve more efficient and competitive system in delivering both, lectures and administrative processes. Furthermore, if the students want to check their fees, then they can enrol courses online payment, or check their attendance.

Therefore, there is a need to automate colleges processes and work. Integrated Academic Management Systems and it is *expensive*. The registration of students' attendance is done manually, which considered as a serious issue. It is not a trivial task due to time-consuming, and it is hard work to record by the lecturer in each class even when the classroom is small. Thus, repeating of the recording process for each class will result in an increased level of the possibility of failure to get accurate results. There is a big correlation between the attendance and the academic success. Hence, attending lectures on a regular basis helps students to get the correct level of understanding. The implementing an automatic model for academic attendance system.

CONCLUSION

This architecture consists of RFID tags, RFID reader, database server, application server, and middleware. During class time, RFID reader scans students' tags and then sends the collected information to middleware layer to perform some filtering. In the application server layer, there is software receives row data and then query the database to search for student ID and mark him/her as a present. The system consists of four main parts include RFID tags, RFID readers, transmission network, and server. The tags can transmit signals to be detected by the RFID reader. The user is responsible for reading the information of the

electronic tags. The transmission of data is conducted through the transmission network. Whereas the server is responsible for processing the data as well as updating the database after the attendance is over. To record the attendance in a classroom, the server will invoke the RFID reader. This will be sent through the transmission network. Then the RFID reader read the students' tags in a classroom. Then collected data of students will be sent back to the server, and finally, the server will query the database to store the data to identify who attend the class.

PROPOSED SOLUTION

The proposed solution for registering the student's attendance consists of three primary levels. These levels are including the following:

• Private and user level: It have the education institution servers, computers, hardware, and user's devices (smartphones, tablets, Pcs).

• Communication and network level: This level contains all network equipment such as switches, routers, and cables. It allows the users connect to the public cloud and request the information, which is stored in the cloud using their Smartphone or tablets from anywhere.

• Public has the Information management, data mining and analysis level: public clouds, information management and analysis clouds.

The information of students, lecturers, courses, and classes will be stored and processed in this level. Information management and data analysis level of proposed solution. Proposed solution consists of two parts: the first part is students' attendance registering system, and the second part is students' attendance management system as mobile application. This application is need to be installed on all classroom's PC which is a built-in Bluetooth device. The application will utilize the built-in Bluetooth device in the PC to discover students' devices, if they use smartphone such as iPhone, Galaxy, HTC, or Nokia. Or even a tablet. The student's devices should have Bluetooth put it in enable mode. However, this application will search and detect the students' devices MAC address and store the mina database corresponding to student identification number. In the lecture session, the application will detect all MAC addresses and store them in the array to match up with Student's list, and register them as attending. This procedure will consume the time and will need more effort. The advanced method is to tell all students in the classroom at the first-class session changing their device Bluetooth name to be their Student ID.

The application will start to discover and search students' Bluetooth Address plus Bluetooth name, then will run a query to update student information record to set the MAC address for each student.

CONCLUSION AND FUTURE WORK

The process of registering students' attendance using Bluetooth technology help to reduce the falsification of attendance, which make students attending classes regularly. Registration of student attendance is not easy, especially if the classroom has a big number of students. This process consumes the time and effort of the lecturer to complete the attendance record and then insert into the official attendance record. In many cases, the recording of

attendance is inaccurate because it relies on manual monitoring and manual recording, thus eliminating the benefit of this process. Therefore, the proposed system helps to complete the process of recording students' attendance through the use of automated methods based on the recognition of the address of phone devices to students through Bluetooth technology.

The proposed program has helped reduce attendance errors and reduced the time and effort required to complete the attendance registration process. that is because all students have their smartphones with built-in Bluetooth. It also relied on smartphone applications for speed, data access, and first-rate absences. Relying on the Bluetooth address technology in recording the student's address in which some disadvantages such as the limited range of Bluetooth and any student can register attendance from outside the boundaries of the lecture hall if the student within the scope of broadcasting Bluetooth. Another solution is to apply the techniques of analyzing and identifying the student image by installing a camera at the entrances to the halls, and then analyzing the entry card information for each student using natural language processing.

The future directions of this work are to design and implement.

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