

EFFICIENT AND PORTABLE FINGER PRINT BASED ATTENDANCE SYSTEM USING GEO-SENSOR

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Abstract:

Nowadays, Near Field Communication is the leading communication system (NFC), in which most of the colleges are using as staff and student attendance based system with the help of NFC. Since there is no solution for giving the attendance from anywhere at certain time. To avoid such type of situation, we can use Geosensing communication system (GCS). In that system the people can register their attendance wherever within the college. In this mechanism, the user can register their presence through smart phone mobile application. Once the user register within the certain period and within college, then their presence will be added to the corresponding server.

Keywords: Internet of Things (IoT), Geosensors, RFID, GCS, WLAN, NFC.

1 .Introduction:

1.1 Internet of Things (IoT)

In 1999, the internet of things was first exposed by Kevin Ashton with the help of framework chain management. The term IoT (Internet of Things) refers that the physical objects in the network are communicated through the each and also the internet enabled systems and devices with the help of IP address. It is also said to be dynamic global network infrastructure, in which the things have the capability to self-configure it based on the interoperable and standard communication protocol. Here the things is integrated with the information network. Things are referred to as human beings, intelligent software agents, virtual

data or any real world objects.

The IoT can't be constrained into any physical boundary because it is internet based one which is access the wide area network. It produces the efficient resolution to global based problems which is environmental monitoring and also it produces the better framework for the international cooperation (e.g. Global Earth Observation System of systems). For data acquisition and networking levels requires several methods for deployment of IoT paradigm. In data acquisition level, the technology used is radio frequency identification (RFID), sensor networks, and also the two-dimensional code equipment. For network level, the mostly used technology is the internet and also wireless local area network (WLAN).

1.2 Characteristics of IoT

1.2.1 Intelligence

In future, the virtual objects and the intelligent entities such as SOA components, is becoming an interoperable and also exploit independently based on environments and also the context. The context information is useful to gather and analysis the objects capability to predict the modification of the environment, then finds the fault in which the area has been affected and launched the appropriate methods to it.

1.2.2 Connectivity

Network compatibility and accessibility are enabled by connectivity. To consume and produce the data from the normal ability are offered by compatibility, through the network, the accessibility is useful.

1.2.3 Complex System

There should be a large amount of interactions and links among the self-directed actors and this link should also have to integrate with the new actors if needed.

1.2.4 Size

There are 50 to 100 trillion objects will be encoded by the internet of objects and can also be coordinate with these objects movement. While in urban areas there are 1000 to 5000 track able objects surrounded with human beings.

1.2.5 Sensors

The sensors are used to create a awareness among the people and the physical world in the surroundings in it.

1.3 Applications of IoT

1.3.1 Media

To measure, collect and analyze are offered by the internet of things. The device should be interconnected through the data. Normally for media industries, there are two process takes place, the one is customer targeting and the another one is data-capture. Thus the two process will be done in automatically while using this internet of things (IoT).

1.3.2 Environmental Monitoring

The air, water quality, atmosphere, soil conditions are monitored by the sensors which is used in the internet of things (IoT) for protecting the environment. Some of the environment conditions which includes earthquake or any tsunami based warning system are also used with the help of these Internet of things (IoT). This internet of things will also include the area such as movement of the wildlife animals in the forest, in which any abnormal situation occurs in the forest, this IoT make warning to the corresponding area.

1.3.3 Infrastructure management

In infrastructure management, the IoT is

mainly used for urban and rural areas which includes railway tracks, bridges etc. It monitors the structural changes occurs in the infrastructure for safety precautions. Once it detects the changes, it just informs the corresponding service providers for scheduling the repair and the maintenance activities. The quality of services, emergency response coordination, and incident management are improved by using this Internet of things (IoT).

1.3.4 Manufacturing

To manufacture the new products and real time optimization, the Internet of things will become the useful one. There should be an network control among the equipment which leads to increase the productivity by earlier detection of the fault and repair mechanisms and it also dynamically makes responds according to the demand of the product. The huge amount of the network sensors are responsible to measure the plant optimization, health and safety management, automated controls and also some other functions.

1.3.5 Medical and Health care Systems

The emergency notification system and remote health monitoring are enabled with the help of the IoT devices. To observe the specialized implants which include advanced hearing aids or pacemakers, the IoT is useful. The health monitoring device will also include the heart rate monitors and also the blood pressure. Some of the specialized sensor will also been used in the living room of the hospital to ensure whether the proper treatment will be administered for the senior citizen.

2. Geo sensing

The device which can receive and measure the environment surroundings, that should be referred geographically is said to be an Geosensors. There are many sensors available which includes air-bone sensors is

useful for man-made or any physical structure laser scans, earth surface sensors for land cover, vegetation indices and the sensor which is under the earth, or near the earth, or on the earth which measures the physical characteristics in anywhere.

The spatial objects are accessed through QR code, RFID by anyone can communicate in which the spatial objects can swap over each other and also with their own social network.

Communicating the Geosensors with the help of Internet of things took following criteria which include:

- The information should be communicated regarding the things with the location.
- The information should be communicated regarding the things with its location and information.
- The instruction should be communicated to the things for controlling the machines and the sensors.

There are many ways to sense the location apart from the GPS location sensing the device. Some mobile device will calculate the location by findings the distance between the nearby cell towers and the phones.

2.1 Technology Used:

2.1.1 RFID (Radio Frequency Identification)

This is used for providing the location based information to the users. This RFID is integrated in anywhere at anyplace. The location information should be stored and provide to the user. The location should be detected within 10-15 meters range.

2.2 Application of Geosensors

2.2.1 Finding Position Infrastructure:

In urban areas, there is a lack of correct geometry (like GDOP), because of the supply of signal will be hardly while using the

GNSS, so to avoid such type of situation we just place the geotags in the corresponding place where to find the location of the particular position . Due to the presence of internet of things, the reliability, accuracy and other related coordinates are bring up to date directly.

2.2.2 Blind People:

The Radio frequency identification (RFID) is placed in the white stick, in which the blind people used to find the obstacles on their way to destination. Once it placed it just send the digital voice to the them, if there is any obstacles occurred.

2.2.3 Intelligent doors:

When the person who is in the home is came near to the door, then it automatically open to allow the person to enter. The RFID which is placed inside the door have the friend list; once they enter the home the door welcome them.

3. Proposed System:

Registering the attendance in education environments is especially used in many universities. It is a highly demanding activity as a result of increasing number of students and staffs. The attendance process are normally involves circulating a paper for the students or signing in staff attendance to register their names, or the lecturer calling the names and registering the students either in a paper or from PDA/PC. In the first case the students' or staff attention may be attracted while taking the lectures and at the same time they can register for students who do not being present in the class.



While in the latter case the issue of cheating in the form of registering for their friends can be solved but imaging the number of students to be from 50 and above, a great portion of the lecture time will be wasted performing this process. Later they propose a smart attendance system using NFC that will simplify the attendance process, by simply touching an attendance poster or the lecturer's NFC (near field communication system) based mobile device in the class. In this case many students trying to marking the attendance without attending the class by touching an attendance poster with others id. Who doesn't present in the class because there is no more direct involvement of a particular person or student. The issue of attendance registration in present-day institutions is really posing a great challenge in academic setting, because of the way the process is done and various hurdles surrounding it. The attendance is an important part of students? Academic record; since in some institutions without a certain percentage student cannot sit for an examination, while in some other institutions it is part of the continuous assessment. later they introduce the new system which contain direct involvement of a particular person or student by their finger print based time attendance system can be

used at many places not only in college it is used in industry, offices, and various shops and malls.

By using Buzzer, keypad, and LCD displays how ever using Finger print save time to gain acceded as compared to other methods like NFC attendance and RFID card or written attendance in register book, but it is located in a fixed place so people need to wait for their turn and need to put their attendance. To reduce the effort and time we can send this data to a remote location using GSM modem or mobile or internet. In this process we use mobile phones (smart phones) are used because now a days every one have mobile phones (android smart phones).

When the student or staff once entered in their campus, they can make their attendance through mobile phone in a certain period of time, which means within the attendance period they should enter their mobile. Once their attendance period is over, they can't be able to make their attendance, because the mobile app is activated only in the attendance period.

4. Conclusion

As the technology improves, thus the relationship between the people and the object also increases which should be provided by the geosensing. By using the geosensing, the objects can be reliably and dynamically exchange the information. Thus the student and staff need not to spend their time to wait in the queue to make their presence through fingerprints. By using the geosensing in the mobile phone they can make their presence within the certain period of time from anywhere in the campus. In future the system should be enhance in the companies and the malls wherever the NFC is available should be replaced by the geosensing.

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