

Designing of Smart Educational Institution using Internet of Things

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Abstract:

This paper describes the design of smart Education Institute using Internet of Things Technology (IoT). Smart Educational Institute can be also known as the smart campus, developing of smart educational institute leads to smart campus development. Through smart campus, it is possible that a campus is connected via online by the outside entity. So that the teaching entity will be done technology in real time. The study of smart campus consist of smartroom, smart parking and smart education. By the study of this paper we can able to design the smart campus by which we can save time, power, etc.

Introduction:

Design of smart Education Institute is an idea based on the smart city. Information and Communication Technology has been used for implementing higher education in many developed countries by which the quality of education will be increased. Whereas by using the smart campus we can improve more than that where the smart campus will provide the entire information about the parking slots, available class rooms and number of students present in the session by which we can plan accordingly and act accordingly

The design and the implementation of smart campus is different with others, depends on the campus needs. The infrastructures to build a smart campus is costly. However, when it is implemented, all the campus activities will be effective and efficient. To build a smart campus, it needs to build the digital infrastructure inside campus that can give services so that it will be

beneficial for surrounding citizens. IoT which bases on the internet, uses a variety of information sensing identification device and information processing equipment, such as RFID, GPS, GIS, JIT, EDI and other devices to combine with the internet to form an extensive network in order to achieve information and intelligence for entity.

The research proposes the solution of RFID design structure integrated by using modern technology from cloud computation, supported by good quality technology and economy. This technology supports things to increase the campus security, asset track record, valuable things, student record, security of paper exam and original certificate. The future class appears to increase pedagogy, in which the students can participate more in the learning process through interaction and collaboration. To make environment that supports future classroom, it needs integrated mechanism of any related things being needed. In this research, the design of structure of Internet of Things was built, in which application domain is being made as system unity related to the internet [5]. To fasten and develop Intelligent.

Campus Internet of Things (ICIOT) more efficiently, the approach based on the runtime model to manage campus was applied as the result of the use of Wireless Sensor Network (WSN). It is hoped that all of management job description can be conducted by executing program that the model has been made appropriate. In the learning part, experiment was conducted and compared by using the traditional method. This method can increase the management effectiveness of campus facilities. the concept of internetbased parking guide by using QR code was introduced. This system runs on cellular platform by visualizing the available parking lot for the customers so that they can make order.

Existing condition:

The existing condition has not covered a smart campus. Between spaces, there is no connection that provides information regarding the total amount of present students or vacant classrooms. The system of parking lot is still manual, no information regarding the available parking lot. The main Disadvantage of this is time consumption and everything will be done manually.

Proposed work:

The communication in smart campus consists on IoT unit that uses radio with the capability of receiving and sending wireless connection. Besides wireless, bluetooth is possible to be used as the connection. The component of IoT consists of hardware, software, cloud service. The design of hardware platform is built based on the needed. The hardware consists of microcontroller board that equipped by many sensor module, wireless, and other connection. The sensor module that being used is based on the needed. Generally, sensor module connected by microcontroller board through wireless. Sensor module being used is RFID, PIR sensor, IR sensor, camera, ultrasonic. Information being sent from the sensor, then being processed and saved in cloud that transmitted to android application. The application provides information to the users about condition and spatial condition, parking lot. The main Advantage of this time savage and everything will be done according to the time.

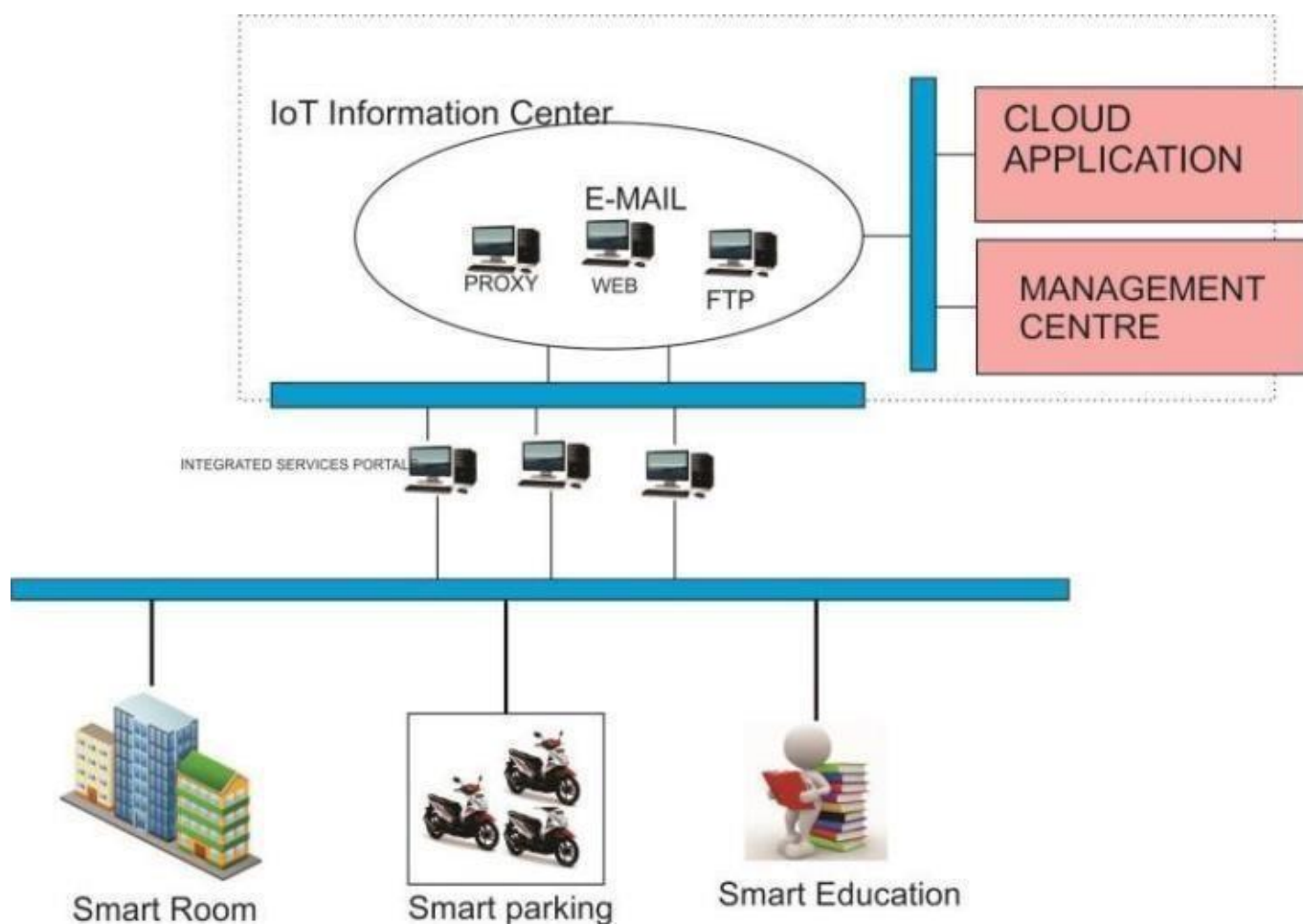
Smart Education Institution Infrastructure:

Smart education Institute is one of the innovations that will be developed in UPY. Adopted from the existing smart city system, one of aspects that being considered in developing smart campus is the infrastructure. The infrastructure is the main key of the campus smart program. If the infrastructure has been well developed, the information related to the campus can be accessed from mobile phone or other gadgets. Some parameters of the smart education institute that being adapted from smart city are:

1. smart education
2. Smart parking
3. Smart room
- 4.

1. Smart education consists of: eLearning, Personalized Learning, Virtual Classroom.
2. Smart parking, a parking system that provides the information about available parking lot and the information that the parking lot has been full.
3. Smart room, system that provides information related to the classroom that is being used or vacant.

Smart Educational Institute :



Smart Education:

In smart campus sector, the learning process is conducted through e-Learning system, that makes it possible for students to be able to join learning from anywhere, anytime with the internet connection. E-learning techniques with video conference facility so that it is possible for students to face the teacher from different place. Besides, virtual class feature can help simulation for students to solve problem in learning. Virtual class can be used for practicum lessons.

Smart parking:

A parking system that provides information related to the available parking lot, also provides information when the parking lot is full. There are 3 parking lot. Sensor is put in the parking lot to scan the vehicle that enters the parking lot. The total amount of the vehicles that in the parking lot are revealed on the board. Next, the information will be processed by the system that provides information to the users about the available parking lot.

Smart Room:

It uses the sensor of PIR, RFID, and camera. The concept of smart room is giving information about the vacant room, and the amount of the students being present on it. The data about amount and the name of the students are saved on the database. In this system, the students use RFID, so that the data of the students are in database. Smart system is being used in smart room. By using the sensor of PIR, the lights will be off automatically if there is no human in the room. On the other hand, the lights will be automatically on if there is or there are people in it.

Conclusion:

IoT technology can be developed in any field. One of which is in the development of smart Education Institute. Smart education Institute is an emerging and challenging concept for the technology to bring it in reality. The design of the system has created a scheme for implementation of smart campus limited on smart education, smart parking and smart room. This paper described the study of the concept that can be helpful in building the smart campus. The result of this research is the design of smart campus system that includes smart education development, smart parking and smart room with the sake of Universities.

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