

An IoT Based Smart and Secured E-Campus

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Abstract: *The very new innovative technology The Internet of things (IoT) in this recent years rapidly developing in this computing world. The Internet of things will change the present world of complex things to the most simple. By considering the other areas transportation, Cities, healthcare, Agriculture, business and different areas, The Internet of things also plays a major role in every college/institute/school. In this modern era every College campus need an IoT technology for better environment to utilize safe & secure technology for e-campuses activities in every institute. In general, every campuses spread over a large area and it is very difficult for management people to control and track activities that happens in campus. This project identifies the key benefits and motivation behind the development of IoT enabled campus. The basic notation of IoT is that objects around us will be connected to the internet to provide control and contextual services. Smart objects return useful information and use it in various applications during that objects of life cycle.*

Keywords: *Internet of things; Communication; Smart and secured campus; sensors*

I. INTRODUCTION

The Internet of Things (IoT) is a recent communication system that ensure a near future, in which the objects of everyday life will be equipped with microcontrollers, transceivers for digital communication, and suitable protocol stacks that will make them able to communicate with one another and with the users, becoming an integral part of the Internet.[1] By working in this way access and communication with the different variety of gadgets and devices like camera, audio recorder, smart watches, Google glass, Digital broad displays, sensors ...etc. the IoT will nurture the improvement of learning circumstance that make use of the huge subject data generated by those objects to provide dynamic services to teachers, learners and even to content developers in modern Campus. Smart e-campus enables us to use IoT methodologies to make it available for classroom notes everywhere inside network Area.[2][5].

II. LITERATURE SURVEY

Aqeel-ur-Rehman et al. in present the outcomes of their research on one feature of future SmU—sensing with RFID (Radio frequency identification) technology; it should benefit students and faculty with identification, tracking, smart lecture room, smart lab, room security, smart attendance taking, etc.

Yu et al. argue that with the development of communication and pervasive computing technology are built to benefit the faculty and students, manage the available resources and enhance user experience with proactive services.

III. BLOCK DIAGRAM

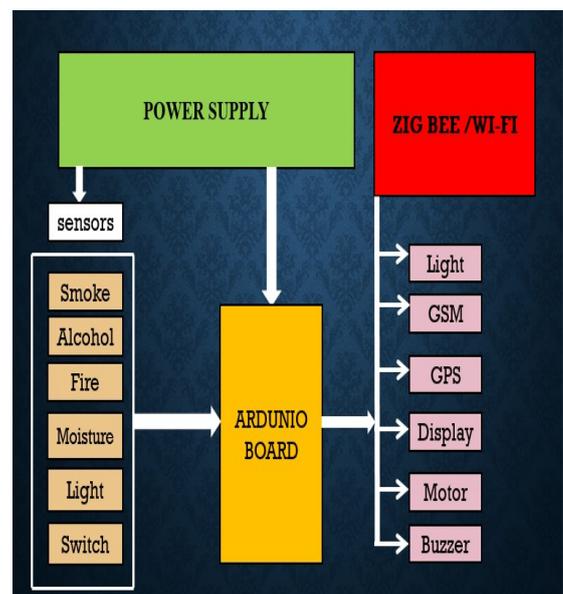


Fig 1. Block Diagram

IV. METHODOLOGY

The concept of smart e-campus is defined like a small world where sensor-enabled and network devices work continuously and collaboratively to make humans more comfort. The Internet of Things (IoT) will change everything, exercises and protests from easy to the most perplexing, and why not, even us people. Other than regions as business, transportation, vitality, medication, horticulture and others, the Internet of Things will likewise have a noteworthy implication in education.[16] A college grounds may speak to the perfect spot for the formation of a keen domain. The point of the thusly venture is to depict another idea called Smart campus, beginning from requirements and focal points and closure with a conceivable design taking into account smart items. Some elements here are:

- **SMART INVENTORY:** Each piece of equipment or component (CPU, printer, scanner, copier ETC) can have an associated bar code which represents inventory number and a QR tag. Using a device connected to the internet with a barcode reader this equipment can be identified with a barcode reader this equipment can be

identified & it can be able to display all associated information.

- AUTOMATED STREET LIGHT: Automatically adjust the classroom light based on the data sent by an external sensor light about power of natural light, which will reduce electricity consumption.
- GSM BASED ALERTS: We get alerts if any unauthorized persons enters the e-campus or in labs any security violations gets occurred.
- SMOKE SENSOR: The sensing element of Figaro gas sensors is a tin dioxide(SnO₂) semiconductor which has a low conductivity in clean air. If any person entering the campus by smoking it will detect that person.
- ALCOHOL SENSOR: This alcohol sensor will detect the alcohol concentration in the breath and it has a high sensitivity and fast response time.
- ULTRASONIC SENSOR: An ultrasonic sensor is a device that can measure the distance to an object by using sound waves. It measures distance by sending out a sound wave at a specific frequency and listening for that sound wave to bounce back.
- CAMPUS GARDEN AUTOMATION WATER FLOW: The innovative Campus Gardena Water flow Meter allows targeted irrigation that is measured and mindful. At a glance based on moisture condition in soil. The consumed water quantity can be read at any time on the large display and thereby controlled. Until now, irrigation has been a matter of personal judgment and one's form on the day.

Sensors and technologies can be identified depending on their usefulness in e-campus, they can be used and after that split in the following and refer in fig [1].

- Temperature - Thermistors, thermocouples, RTD's, IC and many more.
- Pressure - Fiber optic, vacuum, elastic liquid based manometers, LVDT, electronic.
- Flow - Electromagnetic, differential pressure, positional displacement, thermal mass, etc.
- Level Sensors - Differential pressure, ultrasonic radio frequency, radar, thermal displacement, etc.
- Proximity and displacement - LVDT, photoelectric, capacitive, magnetic, ultrasonic.
- Image - Charge coupled devices, CMOS.
- Gas and Fire - Semiconductor, Infrared, Conductance, Electrochemical.
- Others-Moisture, humidity sensor, Speed sensor, mass, Tilt sensor, force, viscosity.

V. ADVANTAGES AND DISADVANTAGES

A. Merits

- Reduction of manpower
- Low cost
- Activities inside the campus can be easily tracked

B. Demerits

- Due to high power sensors may get damaged
- Sometime fault errors may occur

VI. CONCLUSION

The smart e-campus is a more smart objects connected daily in the IoT. It is normal to grow new opportunities for transforming conventional systems in some smart e-campus. Obviously any campus cannot stand outside of this modern trend. If we want to create a more safe and efficient space all actors in this environment. This secured smart e-campus model can be reused in part of whole educational, security, safety, and other areas, like private environment can also use.

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