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Smart City: Environmental Monitoring and Video Surveillance Using Internet of Things

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ABSTRACT

With the progression of advancements in technology, several innovations have been made in the field of communications that are transiting to Internet of Things. In this domain, Sensor Networks are one of those independent sensing devices to monitor physical and environmental conditions along with thousands of applications in other fields. As air pollution being a major environmental change that causes many hazardous effects on human beings that need to be controlled. Hence, we deployed sensor nodes for constant monitoring of the air pollution around the city. This methodology gave us the monitoring data from the stationary nodes deployed in different locations in the city. The data of the air pollution particles such as gases, smoke and other pollutants is collected via sensors on different location in the city and the data is being analyzed when the sensors data is collected by smart phone. Our proposed architecture having innovative network will be more efficient way of gathering data from the nodes of SN. It will have lots of benefits with respect to the future concept of Smart Cities that will have the new technologies related to Internet of Things.

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I. INTRODUCTION

IoT plays important role in smart cities. IoT can be used by governments to provide service to public. Sensor devices can be used to handle environmental conditions. The IoT is a communication skill to envisions near future to everyday life objects to be equipped micro-controller transceivers for digital communication. Suitable protocols are used to communicate with one another user with users to become integral part of internet. In case of urban IoT it can be used to monitor the quality of areas, parks, air, or fitness trails. To realization a such a services we have to deploy air quality and pollution sensors across the city that sensors data access publically. Also we can do video surveillance using smart phone. The Internet of Things is about installing sensors (RFID, IR, GPS, laser scanners, etc.) for everything, and connecting them to the internet through specific protocols for information exchange and communications, in order to achieve intelligent recognition, location, tracking, monitoring and management. Sensor networks consist of wireless sensor nodes, which are devices equipped with a processor, a radio interface, an analog-to-digital converter, multiple sensors, memory and a power supply. The general architecture of a sensor node is illustrated in fig. 1

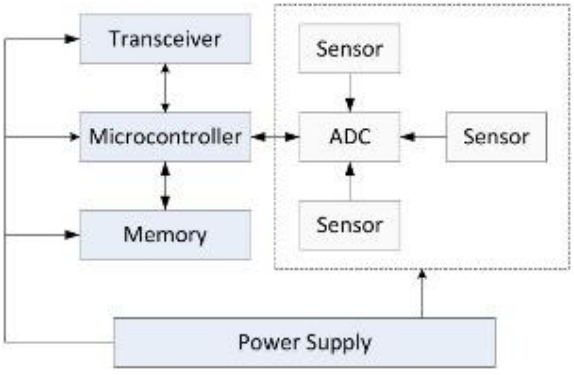

Fig. 1 Architecture of sensor node

II. EXISTING SYSTEM

Across western Europe America air quality eggs can be found. In development of countries IoT can play major role. In tunnels sensor networks can be deployed to monitor range of gases(Co2), air flow and visibility. To measure temperature, humidity, noise similar parameter and strrt light control parameter, video surveillance on highways to qualify measure smart roles we used other sensors. Due to large evolution in wireless communication technology it has given many pollution monitoring sensors and wireless network to monitoring and reporting to pollution services.

Waspmote:
This sensor has a high sensitivity and fast response time. The sensor's output is an analog resistance. The drive circuit is very simple; all you need to do is power the heater coil with 5V, add a load resistance, and connect the output to an ADC.

CitiSense:
It is the only air-quality monitoring system capable of delivering real-time data to users' cell phones and home computers at any time. Data from the sensors can also be used to estimate air quality throughout the area where the devices are deployed, providing information to everyone—not just those carrying sensors.

Environmental Monitoring:
Environmental monitoring applications, along with the sensors give environmental protection by monitoring atmospheric of soil conditions and air or water. It can be also used in movements of wild life and their habitats. Devices such as a resource constraints connected to the internet also means that some other applications like earthquake warning system and tsunami warning system can be used in emergency services to provide alert. Due to changes in parameters we could analysis pollution such a parameter is:

- **Climate change** (environment, dust, temperature, humidity, noise)
- **Industrial wastages**
- **Population**

III. PROPOSED WORK

The goal of Building smart city is raise the aspect of life using technology to improve the efficiency of services and meet resident needs. Using information and communication technology, city officials can directly interact with people to tell what is happing in city. A Smart City is one with at least one initiative addressing one or more of the following six characteristics: Smart Governance, Smart People, Smart Living, Smart Mobility, Smart Economy and Smart Environment. We are going to develop an app that is going to bear a hand in this campaign. Consider an area that is being surveyed for estimating how much the area is affected by pollution. The constituents of air along with its proportion are calculated and if it is higher than normal then the officials are intimated about it. Then the people are evacuated to a safe place.

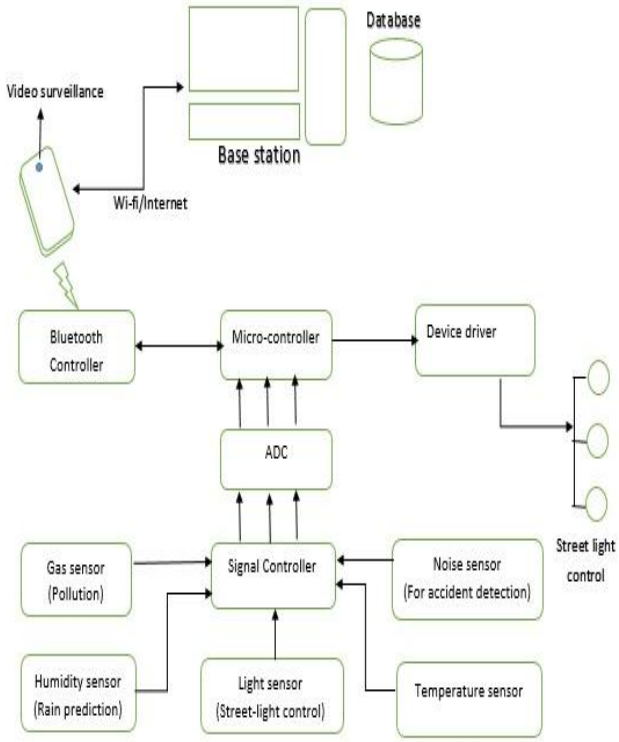

Fig. 2 System Architecture

IV. CONCLUSION

Environmental pollution is one of the tedious tasks since the humans are responsible for this hazardous nature which poses threat to whole world. And we are responsible to eradicate pollution.

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