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Implementation of Air Quality Analyzer Using Internet of things through Android

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Abstract— *Now a days air pollution increases rapidly in environment .There are some persons who are suffering from asthma or allergic to certain type of environment. Therefore we intent to aid their problems, when a person is in a particular type of environment or region or space, so that we can detect either that region is suitable for those who are allergic or not. For an individual, we will set air quality standards to be measured. By this we will gather data of air with the help of an Arduino board, and communication is performed over internet.*

Keywords— Arduino board, sensors, android apps, GSM module, internet of things.

I. INTRODUCTION

The instantaneous development of the "Internet of Things" is changing our reality and drop in cost for typical IOT components is permitting individuals to improve new outlines innovations. IOT design considerations, constraints and interfacing between the physical world and your device will also be covered. The new age of processing has meant we barely ever store things on our gadgets anymore, and instead we keep our dearest photos, records and recordings in the ubiquitous cloud.

Android is a popular, free, open-source versatile platform that has taken the remote world by storm. Android involves software improvement teams on planning, creating, testing, investigating, and distributing professional Android applications components, incorporating the applicable criteria that follow.

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II. LITERATURE SURVEY

A. *Internet of things*

Extending the current Internet with all connected devices (or referred to as "Things") and their virtual representation has been a growing trend in decades. This will create a lots of potentially new applications, products and services in many different aspects, such as smart homes, smart health care, automotive, smart transport and logistics, and environmental monitoring . The research in this area has recently gained lots of attention, of course lots of money, and is supported by the collaboration from academia, industry, and standardization bodies in several communities such as telecommunication, health insurance companies, semantic Web, and informatics. This leads to lots of venture capitals go with the tide.

For many years, common systems have been limited designed for specific purposes with limited flexibility. This means that when one system is running, it cannot be changed dynamically and flexible. The current initiative on introducing the IOT (or more general, the future of Internet) demands application, products and service platforms which can capture, communicate, store, access and share data from the physical world, especially they can communicate with the world. This will create new opportunities in a big range of domains, like smart health, retail, green energy, manufacturing, smart homes and also personalized end-user applications. In this way, IOT plays more and more important role in daily life. The volume of data on the Internet and the Web has already been overwhelming and is still growing at stunning pace: everyday around 2.5 quintillion bytes of data is created and it is estimated that 90% of the data today was generated in the past several years.[3]

B. *Android*

Android is an open source OS that's built on the Linux ® kernel and provides an environment for multiple applications to run simultaneously. These applications are signed and isolated into application sandboxes associated with their application signature. The application sandbox defines the privileges available to the application. Applications are generally built using Android Runtime and interact with the OS through a framework that describes system services, platform Application Programming Interfaces (APIs), and message formats. Other high-level languages (for example, JavaScript ®)

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and lower-level languages (for example, ARM® assembly) are allowed and operate within the same application sandbox. [4]System services are implemented as applications and are constrained by an application sandbox. Above the kernel, there's no concept of a super user or root that has unconstrained access to the system.

. Many Android devices provide a secondary, isolated environment to run privileged or security-sensitive operations that don't need the functionality of a multipurpose OS. This environment is sometimes referred to as a Secure OS. These capabilities can be implemented on a separate processor (such as a standalone Secure Element or Trusted Platform Module [TPM]), or can be isolated beneath the kernel on a shared processor (such as ARM TrustZone ® technology).[4]

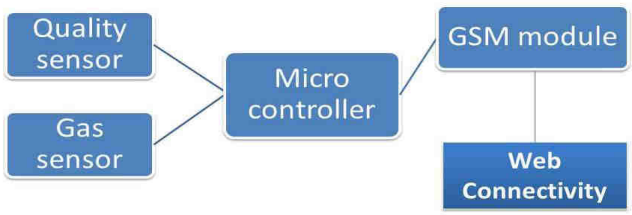
C. Cloud computing

Cloud Computing frequently is taken to be a term that simply renames common technologies and techniques that we have come to know in IT. It may be interpreted to mean data center hosting and then subsequently dismissed without catching the improvements to hosting called utility computing that permit near real time, policy-based control of computing resources.[5] Or it may be interpreted to mean only data center hosting rather than understood to be the significant shift in Internet application architecture that it is.

Cloud computing represents a different way to architect and remotely manage computing resources. One has only to establish an account with Microsoft or Amazon or Google to begin building and deploying application systems into a cloud. These systems can be, but certainly are not restricted to being, simplistic. They can be web applications that require only http services. They might require a relational database. They might require web service infrastructure and message queues. There might be need to interoperate with CRM or e-commerce application services, necessitating construction of a custom technology stack to deploy into the cloud if these services are not already provided there. They might require the use of new types of persistent storage that might never have to be replicated because the new storage technologies build in required reliability.[5]

III. AIR QUALITY ANALYZER

Data Flow Analysis



Smoke Sensor

Ionization-type **smoke alarms** have a small amount of radioactive material between two electrically charged plates, which ionizes the air and causes current to flow between the plates. When **smoke** enters the chamber, it disrupts the flow of ions, thus reducing the flow of current and activating the **alarm**.[1]

Gas Sensor

Gas sensors are accessible in wide particulars relying upon the affectability levels, sort of gas to be detected, physical measurements and various different elements. This Insight covers a methane gas sensor that can detect gasses, for example, smelling salts which may get created from methane.

D.Temperature Sensor

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A **temperature sensor** is a device, typically, a thermocouple or RTD, that provides for **temperature** measurement through an electrical signal. A thermocouple (T/C) is made from two dissimilar metals that generate electrical voltage in direct proportion to changes in **temperature.**

The **gas sensor module** consists of a steel exoskeleton under which a sensing element is housed. This sensing element is subjected to current through connecting leads. This current is known as heating current through it, the gases coming close to the sensing element get ionized and are absorbed by the sensing element.

Drag the cursor up to highlight all of the above author and affiliation lines. Go to Column icon and select "2 Columns". If you have an odd number of affiliations, the final affiliation will be centered on the page; all previous will be in two columns.

E .Arduino Board

An **Arduino Board** is AVR microcontroller based board which follows the standard arduino schematic and is flashed with the arduino boot-loader. The arduino is referred as open source hardware, since the standard schematic is open to everyone and anybody can make their own version of arduino board following the standard schematic. All arduino boards should be compatible with the arduino IDE which can be used to program the arduino boards. The arduino IDE is also open source and anybody can contribute their libraries to the arduino.

IV. CONCLUSION

Thus, we conclude by this we have implemented Air Quality Analyzer to protect our self by hazardous gases and temperature. By keeping the embedded devices in the environment for monitoring enables self protection (i.e., smart environment) to the environment. To implement this need to deploy the sensor devices in the environment for collecting the data and analysis. By deploying sensor devices in the environment, we can bring the environment into real life i.e. it can interact with other objects through the network. Then the collected data and analysis results will be available to the end user through the GSM module.

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