

Review paper on: “ IoT system and its studies with Android Application”

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Abstract:

Now a day's peoples like smart work in every field like your home, industries, bank, medical, school and colleges so for the smart work with IoT device and android application are the good choice for improving your work in your related fields. Today's people widely use the IoT devices for make their work easy and smart because IoT devices able to connect easily to your hand held mobile phone and you can handled or monitor your job profile in all over the world. For ex. Using IoT with android application you can take information about weather like temperature, humidity, and the level of obnoxious gases in air second example is you can handled or monitor your home without your presence, you can on/off lights through wifi connection by using IoT device with android app.

Keywords: IoT, Android application.

Introduction:

With the coming of IoT based technologies the overall industrial sector is tractable to undergo a fundamental and essential change alike to the industrial revolution. this technology helps for Online Monitoring solutions of environmental pollution using Internet of Things techniques with android applications help us to get the parameter values such as pH, temperature, humidity and gases level in environment, etc. Using IoT sensors including unique technology. This paper introduces the IoT device with android application are the better solution today for make our future better however the entire research most of the industries, companies use the IoT with android applications because everyone using the smart phone today as well as easy to carry every were without any difficulty

1.1 Information about IoT



Fig. Internet of Things with future work

The IoT is an advance technology of interconnected computation an electronic devices with digitization techniques which is useful for dumb instruments, human beings or animals that are provided with new identities and the efficiency to transmit data over a network without requiring humans help or computer interaction.

1.2 Information about Android Application

Android is a mobile operating system such as phones, tablets, smart watches or other mobile devices. Android is developed by organizations known as the open handset alliance with Google. Android applications most widely used in industrial work, companies for data saving, Banking system for employees smart work, environmental field to give information about environmental changes like weather, etc. Today's every people use handheld device like smartphones, tablets, that are easy to move or take any were in the world most of the devices using micro IoT sensors in android phones. Every day the technology has to be change, and new advance features are daily come into the market. Android application developed through Android studio.

Table 1. Runtime Version List Of Android Devices:

Version	Code name	Realise Date	API Level	Runtime	First Device to run Version
10	10	September 3, 2019	29	ART	Pixel, Pixel XL, Pixel 2, Pixel 2 XL, Pixel 3, Pixel 3 XL, Pixel 3a, Pixel 3a XL ^[375]
9	Pie	August 6, 2018	28	ART	Essential Phone, Pixel, Pixel XL, Pixel 2, Pixel 2 XL, Nokia 7 Plus, OnePlus 6, Oppo R15 Pro, Sony Xperia XZ2, Vivo X21UD, Vivo X21, Xiaomi Mi Mix 2S ^[376]
8.1	Oreo	December 5, 2017	27	ART	Pixel, Pixel XL, Nexus 6P, Nexus 5X
8.0		August 21, 2017	26	ART	N/A
7.1	Nougat	October 4, 2016	25	ART	Pixel, Pixel XL
7.0		August 22, 2016	24	ART	Nexus 5X, Nexus 6P
6.0	Marshmallow	October 5, 2015	23	ART	
5.1	Lollipop	March 9, 2015	22	ART	Android One
5.0		November 3, 2014	21	ART 2.1.0	Nexus 6, Nexus 9
4.4	KitKat	October 31, 2013	19	Dalvik (and ART 1.6.0)	Nexus 5
4.3	Jelly Bean	July 24, 2013	18	Dalvik	Nexus 7 2013
4.2		November 13, 2012	17	Dalvik	Nexus 4, Nexus 10
4.1		July 9, 2012	16	Dalvik	Nexus 7
4.0	Ice Cream Sandwich	October 19, 2011	15	Dalvik	Galaxy Nexus

2.3	Gingerbread	February 9, 2011	10	Dalvik 1.4.0	Nexus S
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1.3 How Android is used in IOT:

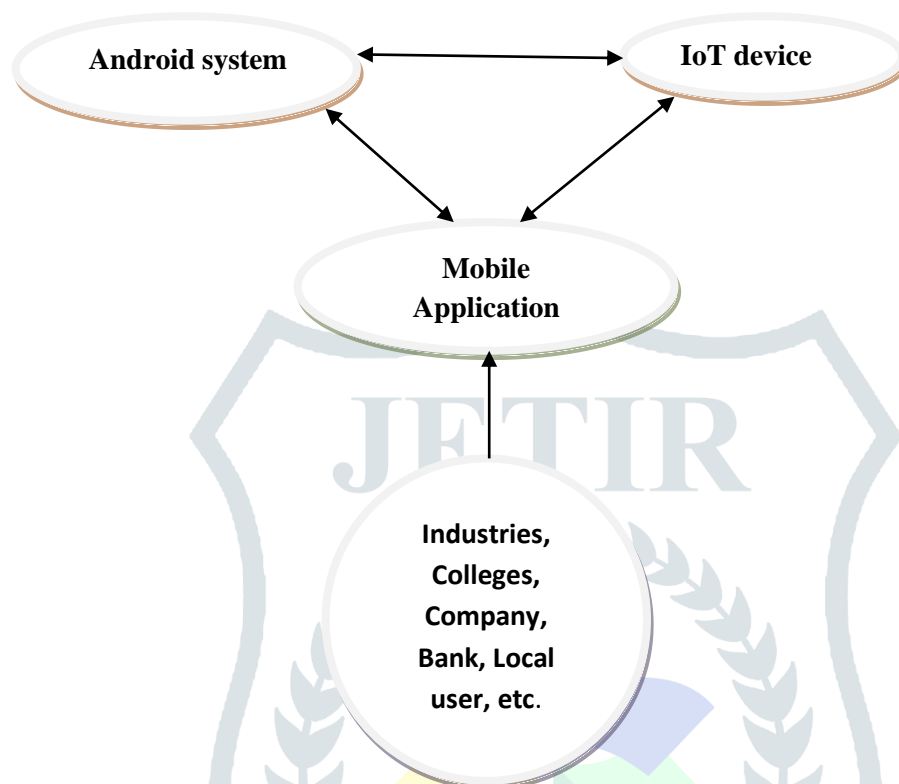


Fig. IoT device with Android Application

The 'internet of things' (IoT) is already here and growing at a rapid rate. IoT is the things to generate new features devices with different smart sensors connectivity that allows them to receive gather and transmit information. IoT devices are widely available in the market however the human beings widely used the electronic devices in their homes, offices, hospitals, bank, and industrial area, etc. with their new features like smart TV, refrigerator, smart washing machine, gym electronic instruments, etc. you can easily handle that devices in your home by using the Android phones. There is an ability to connect and receive information through different sensors via the use of the internet. In our literature survey we see the smart electronic devices are most widely used in the industrial area smart sensing sensors are used for smart work with smart mobile phones which capable to communicate and receive information. The mixture of IoT and Android application helps to make easy work not only the industrial people but also common people those who are using electronic devices they can easy to control or on/off that devices through smart mobile phones for eg. Lights on/off via mobile phones etc.

2. 1 Here a few main components (IoT) devices with Android applications:

- **Proximity detection:**

Proximity detection is a sensor that is capable to detect nearer objects without any physical support. Proximity detection is used in many applications but most widely used in smartphones or android devices.

- **Humidity or Moisture Level**

Humidity or moisture level is a sensor which is available in IoT device that can be able to detect the humidity and moisture level in the environment. Humidity is the term that measures the moistures of water in the gaseous form [12]. Humidity sensing applications are increasingly used in various industries medical and health, automotive, food processing, building and construction, semiconductor, metrological [12]. Humidity or moisture level android applications available in smartphone devices which can help to give information about the environment.

- **Temperature sensors and thermostats**

Temperature sensor and thermostats are a sensor device which can be able to maintain the temperature that cools or hot by using set point. This type of sensors widely used in to monitor the building heating, air conditioner, central heating, water heater, etc. thermostats large used

in offices or apartments to monitor the room temperature including set point[13] Android application can use the temperature sensor, most of the tablets and smartphone Device use the better application to measure the temperature in environment.

- **Pressure sensors:**

Pressure sensor is a sensor that can be able to measure the pressure like water, gas, fluid, altitude, speed, etc. Various pressure sensors available in the market like ground contact force (GCF) which can be used to detect the phases of the human gait. For example, smart shoes [14]. nowadays most of the android devices use the pressure sensor for measuring the level of gas, water, etc.

- **RIFD tags:**

Radio Frequency Identification (RFID) is a system used for radio waves which can be able to detect the person or objects at any distance not only to detect humans and objects but also detect Barcode, Magnetic Strip, IC card, Optic Character Recognition (OCR), Voice Recognition, Fingerprint and Optical Strip, etc are also identification technologies [15]. The RIFD tags most widely used for wildlife tagged in the animal collar which is helping to monitor animals life in forest-like animals behaviour, location, eating habits. RIFD use in Android mobile application simply to detect any objects anywhere.

In this research paper, we see the IoT device with android applications give the better result for making our work easier and faster.

3.1 Literature survey on IoT with Mobile Application:

The author Alexander Filonenko et al [1] considered the advanced and unique features of video surveillance system which are widely famous in the world and increasingly used in big factories. In this paper author claim, an improved system, CCTV camera remains low resolving power and in new system video surveillance have high resolving power, which can capture the videos of restricted areas and easily viewed videos on PC or mobile devices. Pan – Tilt – Zoom camera and sensor nodes watched the danger zone area and detected transparent obnoxious gases. It is not able to detect only the toxic gases but also able to detect atmospheric temperature, humidness, fume concentration also. Finally, the article proves that the new system has advanced technology than the previous, which react immediately and gives information about the restricted area

The author Lem Hang et al [2] considered the SCDR technology. In this paper author claim on solar robots have advanced features, which can detect obnoxious gases on the upper ground and underground area of the coal mines, industries, and public places. Finally, this article proves that this new technology capable of developing a healthier ecosystem with advanced technology and alert the peoples before any cause.

In 2009 china, the author Xia Song in 2009 china et al [3] considered KML with a tag-based structure and Google Earth Plug-in with its API technology. In this article, the author claims an improved technology smartly to carry out data and improved it. In this technology, Essential algorithms were used for editing graphics. Google earth viewers were used to find out the navigation and geographical location with Microsoft.net platform. Finally, the article proves this advanced technology is very helpful in monitoring the polluted area.

In 2004 Japan, The author Akira Fujimoto et al [4] considered the Smell selective gas sensor technology. This article focused to identify the smelly gases and measured the delay time, velocity by the use of a triangular pulse. Finally, the article proves this advanced technology capable to detect identify smell with modulation heating.

In 2017, Odisha, The author Kunja Bihari Swain et al [5] considered the IoT system with new sensor devices such as MG-811 and DHT - 11 sensors with AT-mega 2560 Arduino board which can collect atmospheric information and detect obnoxious gases. In this article the pollution monitoring experiment done based on Lab View by using IoT with new sensor devices. Finally, the article proves that the concept of IoT able to monitor environmental pollution & update the online database.

In 2011, China, The author Mao Yaming et al [6] considered the GIS technology. In this article, the author introduced this improved technology which can able to detect the obnoxious gas and gas spread model with the help of optimal path algorithm. Finally, the article proves that the optimal path algorithm helpful to detect the obnoxious gas spread area and rapidly provide emergency rescue on time without any delay.

In 2006 Hyderabad, India, The author T.K Bhattacharya et al [7] considered the smart sensor systems. In this article, the author introduced the new technology that is smart sensors system which can detect obnoxious gases like Methane (CH₄) and Carbon Monoxide (CO). Finally, the article proves this improved technology capable to distinguish a range of obnoxious gas in the form of percentage and part per million through FM.

In 2016, Austria, The author Mithun Mukherjee et al [8] considered the sleep scheduling system, which can be used to detect the obnoxious and harmful gases in industrial area. In this article author claim on this advanced system based on sleep scheduling algorithm with CKN which can be used to help for global connectivity in large area network and help to increase the number of awake node in network area.

In 2008 USA, The author Jiyeom et al [9] considered the muGPC technology to detect obnoxious gas in industrial area. In this article, an improved technology used a muM8 detector can detect overall limit and poisonous gas as well as integration with 10 or < 10 ppb.

In 2014 Chennai, India, The author M.V Shyla et al [10] considered the optimal sensor position using CFD software with a surface sensing system which can detect the different surface-based on current environmental situation. This article improved a three-dimensional flow of h2cncho with density and coefficient of viscosity with steady and unsteady conditions. Finally the article proves the optimal sensor & CFD software are capable to monitor the current environmental situation with the upstream & downstream system for sensors are quickly detect obnoxious gases and try to inform about the danger zone area within a second.

In 2016 Warangal, the author Ravi Kishore Kodali et al [11] considered the IoT Based Smart Security and Home Automation System for monitoring the house in the absence, however, if any guest reached into the home at that time you are not present in your home so this IoT based application helps you can take care your guest in your absence. Simply connect your Wi-Fi in that device and easily handled the home system through mobile in any were or out of the home. In this paper, the author used the —IoT, TI Wi-Fi CC3200 Launchpad, and Internet for developed smart-home automated system.

Conclusion:

Now a day's human beings like smart work in the above research we see the internet of things with android applications give the smart result for industries, medical, colleges, etc. anybody work without a trace. The Internet of things is a good platform including new technologies which is helping to improve the quality of smart work and save time not only working people but also local people who are using smartphones.

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