

# MONITORING OF SMART OFFICE USING IOT

**Dr. Kishore Kumar P**

*Associate Professor, Department of EEE, Faculty of Engineering and Technology  
Jain (Deemed-to-be University), Ramnagar District, Karnataka – 562112*

*Email Id- [k.kishore@jainuniversity.ac.in](mailto:k.kishore@jainuniversity.ac.in)*

## **Abstract**

*Internet-of-things (IoT) is the particular integration of various electronic devices; Internet of Things (IoT) is providing value to products and applications in recent years. The connectivity of the IoT devices over the network has reduced the consumption of power, connectivity and robustness to access information over the network. The smart office automation of Biometric, lightning & cooling proposed systems enhance the way to control the office, the function of Biometric, air conditioning & lightning systems and their interactions with authorized users. The proposed system measures present temperatures at different parts of the office, this proposed system also provides the occupancy status means presence of employee in the office. Thus the authorized authority can monitor all the information with the help of the GSM module and control the office as the authority wants. Moreover, energy saving is one of the most important parts of trends now. With the help of the number of employee status, the proposed system automatically turns on the light and system devices when the office is empty automatically turn them off. Which improves the energy consumption as well as the users' experience? Also with help of installed mobile Application on their phone, authorized authorities can monitor or control live status of the office from anywhere as long as the internet exists.*

**Keywords:** Automation, Office, IOT, Sensor, GSM module, Communication.

## **I.INTRODUCTION**

Most people spend a lot of time in offices nowadays. The office atmosphere should be leisurely so that staff can offer their best as the office environment directly affects the employee/working worker's performance. So comfort is a must and in the office it is necessary. Technology at its peak in previous decades meant a fax machine and an electronic typewriter; today it's an iPod linked to the cloud solution. A smart office is an environment that makes life easier for workers and clients, inspiring them and enhancing their ability to remain connected. This is done by making use of different advanced technologies and various tools and solutions to boost user performance. As the physical boundaries are being bridged, a competitive and complex world

focuses on innovation and creativity is being developed. The world is greatly experiencing the emergence of intelligent growth zones so smart office- has fast become the need of the hour[1]. A smart office is something that ensures that IT resources and physical infrastructure are efficiently and optimally utilized. In other words, information technology offices are automated in today's generation of offices. Transparent, technologically advanced environments are required. Office automation therefore enables processes to become more transparent and allows knowledge to be exchanged more freely, providing an ability to have a significant impact on the functioning of the industrial sector and industry. The use of various communication tools in the system and effective advanced automation shows the positive effect over a period of time on the growth of the company or any organization and sector. The benefit of the smart office is the absence of internal monitoring procedures, i.e. in/out timings of the employees through an open office arrangement. Productivity can be enhanced by better coordination between team members, which influences the outcome. A smart office is intended to unlock the full potential of staff and the workforce. Only creative thinking and modern technology that better serves the needs of people is not a miracle. Among other aspects, office automation enables collaboration and quick reporting in real time.

One of the major sources of global energy demand is the building industry. It absorbs almost one third of the overall consumption of electricity. Smart construction is like a smart home that, by intelligently gathering and analyzing sensor data, optimizes performance, comfort and protection. Modern buildings have sophisticated mechanical equipment, automated control systems and numerous features to improve occupants' safety and productivity. A smart building can be called a super-system of building-connected subsystems[2]. Connectivity between all the systems and equipment in a building is needed for smart construction. It helps to visualize data and make simple and effective decisions by building managers. By using different techniques, the smart building can be created. Automatic centralized control of a building's various sub-systems, i.e. lighting, heating, ventilation and air conditioning, and other systems, is accomplished by a building automation or building management system. Objectives of building automation system are improved efficient operation of building systems, occupant comfort, and decrease in energy consumption and operating costs, and improve life cycle of utilities. Architectural building uses a lot of electricity. It is possible to save large quantities of energy by controlling power use in commercial buildings[3]. Due to these problems, the concept of Smart Office arises. This smart office design principle can be extended to whole buildings, i.e. smart office buildings that decrease energy consumption. In everyday life, security plays a critical role. Users have high security systems because of the introduction of fast rising technology. Schemes should be strongly shielded. These authentication technologies include ATMs and other smart cards, systems based on user passwords, and many others. But the downside of RFID is that it can be stolen or the ID can even be used and entered by any other user. This isn't healthy at all. In spite of all these shortcomings and malfunctions, biometric or fingerprint authentication-based identification is the most effective and reliable security solution[4].

Automation is the use of different operating equipment control systems, such as machines, factory processes, boilers and heat treatment ovens, telephone network switching, steering and stabilization of ships, aircraft and other applications, and vehicles with limited or decreased human interference. There are different kinds of automation. They can be classified as home automation, office automation, and factory automation, autonomous automation, building automation and others, depending on the application. Wireless Office Automation using IoT Office Automation is the method of automatically controlling multiple office electrical appliances such as fan, lamp, machine, microwave oven using remote control system techniques with protection systems mounted in them in the form of human and fire sensors. There are various techniques for controlling electrical appliances in the office, such as IoT-based cloud office automation, Wifi from any smartphone through Android apps, Arduino-based Office Automation, Office Automation using digital control, RF-based Office Automation and Office Automation based on the touch screen. IoT Wireless Office Automation is an advanced Internet of Things technology designed to remotely monitor office equipment using Android apps[5].

The Internet of Things (IoT) can be described as connecting everyday objects to the Internet, such as smartphones, Internet TVs, actuators and sensors, where devices are intelligently linked together to allow new forms of communication between things, people, and things themselves. In the fields of vehicles, agriculture, security monitoring, building management, transport, smart-homes, and health care, the Internet of things is currently being used. The Internet of Things can be described as a technology for connecting the different types of mobile devices to the internet, such as smartphones, personal computers and tablets, which can bring about a very modern form of communication between things or objects, people and things as well[6]. In recent days, the introduction of the Internet of Things has provided the research and development of home and office automation that is becoming popular. In order to support disabled people, most of the devices in smart offices can be managed and tracked. There are numerous wireless technologies that allow terminals to link to enhance the intelligence of the office environment from remote locations. When any person wants to communicate with other things or objects, an intelligent IoT network is created. IoT technology is evolving with a more innovative concept and substantial growth for smart homes and smart offices to enhance the living standards of life[7].

The Internet of Things is contributing to the creation of a multitude of smart objects that can be built to transform homes and office spaces into real smart offices. Taking advantage of the new communications and information technology developments in this methodology. Wireless devices are now becoming highly efficient and more common around the world, and end consumers are appreciating the use of wireless technologies, which enables them to relive the boring connections of wired cables. Embedded Bluetooth, RF, Zigbee technologies and digital devices have recently been used to form a network where electrical devices can connect with each other. Currently the office and home automation are one of the prime applications of Bluetooth technology. The Internet of Things is a system that uses computers or mobile

terminals to automatically monitor the basic features and functions of the home through the Internet. Basically, office automation can offer occupants ease, comfort, protection and energy efficiency[8]. There are three levels of the system architecture: the office work area, the office portal and the remote environment. The remote environment will notify approved users who can access the device through Wi-Fi, 3G or 4G internet networks on their mobile applications via the Internet. The Home Gateway and the hardware interfacing module consist of the office or home automation environment. The basic function of the Home Gateway for the proposed system is to provide Internet-to-Internet data translation services. Built-in Wi-Fi is supported by a mobile phone based on Android technology and can be used to access devices in the office and at home. Undoubtedly, the spread of the computing world is changing our lifestyle. Our working conditions have improved for the better. Advanced home automation can create a relaxing home environment, for example. Those pursuing a luxurious lifestyle as well as individuals with special needs will also benefit from home automation, as wireless control mode can help them conveniently and accurately conduct their daily activities. Besides, voice control access will be used as a command for better purpose. Voice is not only the simplest and the most commonly used tool of information exchange among people, but also one of the important means of communication between people and machines[9].

## II. CONCLUSION & DISCUSSION

It is exclusively targeted for the elderly, physically handicapped and for the convenience of controlling the switches without actually reaching for it. The designing of a login page in android application and usage of human and fire sensors while designing the hardware keeps the system safe, highly error-free and efficient. The system has the scope for modifications, and more devices can be added. Also, Arduino which is an open source has made possible to realize the difficult tasks quite easily because of its enriched libraries. Lighting, lighting, heating, ventilation, access to the door and smoke detection systems are being established. Biometric fingerprinting is used for authentication purposes. The office area cannot be reached by another human. It uses a fire alarm system. Whenever the threshold is reached, the alarm will be ON and the call in the service room will be made on the smartphone. The system's smart office system is based on an autonomous smart office and then applied to the entire smart house. Two operating modes, Automatic Mode and Manual Mode, are used in this smart office system. The manual mode is regarded as an automatic mode supplement.

## III. REFERENCES

- [1] A. S. Kapare and P. G. Student, "Smart Office Area Monitoring and Control Based on IoT," vol. 4, no. 4, pp. 48–52, 2017.
- [2] R. Bhuyar and S. Ansari, "Smart Office Automation System," *Int. J. Emerg. Trends Technol. Comput. Sci.*, vol. 5, no. 4, 2016.
- [3] K. Selvaraj and A. Chakrapani, "Smart Office Automation System for Energy Saving," *Int. J. Adv. Comput. Electron. Eng.*, vol. 2, no. 9, pp. 8–12, 2017.

- 
- [4] M. N. Murthy, "A Smart Office Automation System Using Raspberry Pi ( Model-B )," *2018 Int. Conf. Curr. Trends Towar. Converging Technol.*, pp. 1–5, 2018.
- [5] P. P. R. Rodge, J. Prajapati, A. Salve, and P. Sangle, "IoT Based Smart Interactive Office Automation," *Int. Res. J. Eng. Technol.*, vol. 4, no. 4, pp. 982–986, 2017.
- [6] C. Code, *Office automation*. .
- [7] S. Muñoz, O. Araque, J. Fernando Sánchez-Rada, and C. A. Iglesias, "An emotion aware task automation architecture based on semantic technologies for smart offices," *Sensors (Switzerland)*, vol. 18, no. 5, 2018, doi: 10.3390/s18051499.
- [8] R. Bhuyar and S. Ansari, "Design and Implementation of Smart Office Automation System," *Int. J. Comput. Appl.*, vol. 151, no. 3, pp. 37–42, 2016, doi: 10.5120/ijca2016911716.
- [9] H. S. Sahana, V. S. Sandeep, R. Shwetha, J. Sowmya, and K. S. Krupa, "Office Automation System Using Internet of Things," *Int. Res. J. Eng. Technol.*, vol. 4, no. 7, pp. 1619–1622, 2017.