

# CONTROLLING AND MONITORING OF SMART OFFICE VIA IOT

**Sunil M P**

*Faculty of Engineering and Technology*

*Jain (Deemed-to-be University), Ramnagar District, Karnataka – 562112*

*Email Id- [mp.sunil@jainuniversity.ac.in](mailto:mp.sunil@jainuniversity.ac.in)*

## **Abstract**

*Design & implementation of smart automation systems for the office environment is being done in this system. Based on lighting, ventilation, luminance, safety, various control subsystems are designed. Different sensors are used to extract real-time data, i.e. temperature, strength of light, smoke, motion sensors are used. This information obtained by these different sensors is then sent to the ARM 11 Controller. It is also sent to a PC where information is processed. This data is sent to other PCs through a network switch. The collected information is preserved in a database and can be accessed at any time. The data is sent to an Android device or any device allowed by the internet. This system also offers emergency services dependent on need, such as ambulance call, fire alarms. For protection purposes, biometric fingerprints are used. Manual mode and automatic mode are two alternative modes designed to promote the usability of smart office systems. Control of electric lighting fixtures of different office spaces is done.*

**Keywords:** *Smart Office, Automation, Electricity concern, IoT, Data transmission, Android application.*

## **I. INTRODUCTION**

Nowadays most people spend a lot of time in offices. Environment of Office should be comfortable so that the employees of the office can deliver their best in the environment of the office. Office employees' working efficiency is directly affected by the environment of offices. So leisure is important and it is required in the office. A smart office is a place which makes employee life easy and empowers & increases employee ability to stay connected. This is gained by making use of different advanced technology and various tools and providing solutions to increase efficiency of the employee. As the official areas are bridged, a complex & competitive world focuses on creativity & innovation is developed. Entire world is

experiencing the emergence of intelligent growth zones. That's why smart offices have fast become the need of the hour [1].

IOT is a system which uses computers or mobile to operate the basic official functions and parameters automatically through the GSM module. Basically smart office automation provides comfort, convenience, energy efficiency & security to the office. The proposed system design is further divided into three layers: office work environment, Gateway of office and remote environment of office. Remote environment notify authorized authority, authorized authority can operate the system on their laptop or phone applications using the Internet with the help of GSM module or 4G mobile networks. The smart office automation environment consists of hardware interfacing & Home Gateway modules. The primary role of the Home Gateway for the designed equipment is to provide the data transmission services between Internets.

There are different types of office automation, based on the application which can be categorized as smart office automation, smart office automation, autonomous automation, industrial automation, building automation and many more. This paper deals about Wireless Office Automation using IoT. The Smart Office Automation process controls various electrical equipment in the office such as AC, fans, lights, computers, microwave ovens and many more automatically using remote control system techniques with safety installed in them in the form of fire sensors. There are different techniques to operate different electrical appliances in smart offices based on IoT [2]. Smart office automation over Web server through GSM module over android applications from any smart phone, Smart Office automation based on Arduino, digital control smart office automation, Smart Office Automation based on RF and Smart Office Automation based on touch screen. Smart Office Automation based on Wireless using IoT is an innovative application of IOT developed to manage smart office appliances remotely using android application. This paper deals about Arduino based Office Automation [3].

Today's office represents the biggest and exciting place for information technology application. Generally, office means a centralized place where sort paperwork is operated with the help of office clerks on their particular allocated desk. The basic definition of an office can be: "A place where proper records for the purpose of control information and efficient and effective operations are prepared handled and serviced". In general, an office is defined as a place where professionals like engineers, physicians or lawyers operate their business. Which may consist of chairs, Almirahs, few tables, electrical equipment like fans, Ac & many more? Employees in the office can be executives, managers, secretaries & many more employees [4].

The operation performed by an office may be derived as primary and secondary. The office Primary function is to preserve, make & use records of the institute. The secondary functions are divided into five categories.

1. Planning
2. Communication

3. Statistics Presentation & Compilation.
4. Cost Reduction & Systematization.
5. Management & Creation Information.

By two methods the system can perform application.

1. GSM (Global System for Mobile Communication).
2. Android Application: SMS communication is done via GSM module. For giving alert information SMS communication is used in the office for Security purposes [6]. Whenever any employee enters the office then alert information is sent on the authorized authority mobile phone to which the system is connected to inform the authorized authority about the presence of a particular employee in the office when the authorized authority is away from his office [5].

Android Application is working to change the adjustment of the office. An Android application works with the list of different office appliances which is operated by an Android wireless mobile phone. When a particular appliance is selected from the list then only that action is function on that appliance.

There are mainly two type of possible communication

1. Input communication
2. Output communication

In Input communication the user sends new configuration to the system using SMS or an Android App. The input communication is used for the secured mode. Whenever any employee enters the house, SMS is sent to the user in this communication. The output communication will occur in two modes:

1. SMS (via GSM)
2. Android application

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 [8]. In the fields of vehicles, agriculture, security monitoring, building management, transport, smart-homes, and health care, the Internet of things is currently being used [6]. 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.

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].

## II. CONCLUSION & DISCUSSION

System introduces the event of an office management and accomplishment of security systems using Raspberry pi and Internet of Things technology. This paper introduces a wireless solution based on Internet protocol to manage and monitor the office units easily. The application of the IoT technology in Office area automation means a combination of all appliances and the electronic devices like smart mobile phone, personal computer, tablet, and also the monitoring, control of the work environment. This proposed system provides many advantages towards security, improved comfort and energy, and cost savings. Thus it builds an autonomous environment in the work area. If the temperature is low or high then the threshold value then the fan or AC will be ON. Smoke sensors will sense the presence of fire or smoke. The Alarm will get activated if in office any fire or smoke is detected. If in office any smoke or fire is detected, a call is arranged to the authority of the Fire extinguisher and to the emergency rooms which can provide immediate service. All the observed data is sent to the microcontroller.

## 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] C. Code, *Office automation*. .
- [6] 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.
- [7] 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.