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Smart Auditorium Automation Using IOT

T.Dinesh Kumar[1], L. Hemanth Kumar[2], P. Sai Vijaya Sravan Kumar[3],V. Rakesh Aditya Sai[4]

[1]Assistant Professor,[2,3,4]Student (B.E)
Department of Electronics and Communication Engineering.
Sri Chandrasekharendra Saraswathi Viswa Mahavidyalaya, SCSVMV[Deemed to be University], Kanchipuram, Tamil Nadu, India.
E-mail:dinesh_6003@kanchiuniv.ac.in

ABSTRACT:

Low-power electrical devices have exploded in popularity in recent years. The technologies are widely utilized to make our daily lives easier. The energy consumption of these portable electronic devices is increasing.Automation is accomplished by the use of a variety of sensors for monitoring production processes, actuators, and numerous techniques and equipment. On the smart auditorium, the automation system established in this study is an automatic lamp and an automatic fan. A microcontroller will be used to process both of these systems.Sensors were needed to detect the light from the LDR (Light Dependent Resistor) sensor in the autonomous lamp system. The automatic fan system, on the other hand, requires temperature sensors and an automatic fire detector. When the light begins to dim, the lamp can switch on automatically, and it can also turn off automatically when the light brightens again.

INTERNET OF THINGS (IoT)

I. BACKGROUND

The digital realm has undergone significant modifications in recent years and, according to industry analysts, will continue to do so. The Internet of Things is the most recent arrival into the digital realm (IoT). IoT can also be defined as the interaction of the software, telecommunications, and electronic hardware industries, and it promises to open up a slew of new prospects for a variety of industries. The Internet of Things (IoT), which will be fed by trillions of sensors, working with billions of intelligent systems, and involving millions of applications, will drive new consumer and business behavior that will demand increasingly intelligent industry solutions, resulting in trillions of dollars in opportunity for the IT industry and even more for the companies that take advantage of the IoT. In 2011, the number of Internet-connected devices (12.5 billion) on the globe surpassed the number of humans (7 billion), and by 2020, the number of Internet-connected devices is predicted to reach between 26 billion and 50 billion worldwide. The Indian government's goal to build 100 smart cities across the country, for which Rs. 7,060 crores has been set aside in the current budget, could result in a vast and rapid expansion of IoT in India. In addition, the government's announcement of the Digital India Program, which aims to turn India into a digitally empowered society and knowledge economy, would give the necessary momentum for the country's IoT industry to grow. The many initiatives outlined under the Smart City idea and the Digital India Program to establish Digital Infrastructure throughout the country will aid the IoT business. The Internet of Things (IoT) will be important in making these cities smarter.

Some of the key aspects of a smart city will be:

- Smart parking
- Intelligent transport system.
- Tele-care.
- Woman Safety Smart grids.
- Smart urban lighting.
- Waste management.
- Smart city maintenance.
- Digital-signage.
- Water Management

Through remotely connected devices, IoT can help automate solutions to challenges encountered by many industries such as agriculture, health services, energy, security, disaster management, and so on. Telecom operators and system integrators have taken the lead in the deployment of IoT applications and services, as the technology provides opportunities for them to considerably increase their earnings. Aside from direct IoT applications,

the IT industry has the possibility to deliver IoT-related services, analytics, and apps.
Internet of Things involves three distinct stages:

1. sensors that gather data (including sensor/device identification and addressing),
2. an application that collects and analyzes data for further consolidation,
3. decision-making and data transmission to the decision-making server

The decision-making process could be aided by analytical engines and Big Data. Several countries, including the United States, South Korea, and China, have grabbed the lead in terms of IoT readiness. Citizens, government, and industry would be the primary stakeholders in Internet of Things programs. Each stakeholder's participation and engagement at the proper stage is critical. At this point, rules for the promotion of IoT and the selection of critical domains are required, followed by a focus on developing answers for how data will serve citizens. The Internet of Things should plan with the basic goal of increasing value and decreasing costs. Industry collaboration, lessons learned from global forums, lessons learned from other nations that are leaders in IoT, and active participation of global partners will all aid us in moving toward a more innovation-driven strategy. The success of the Internet of Things will be determined by the creation of open platforms that are simple to use and low in cost, as well as the development of scalable models and the utilization of citizens as sensors. To reap the greatest benefits, data must be collected and shared openly across functions. Participation of start-ups at this stage will assist us in developing some new methods/ concepts that could serve as pillars for the entire smart concept to come.

II. DEFINITION

The Internet of Things (IoT) is a seamlessly connected network of embedded objects/devices with unique IDs that may communicate with one another utilizing standard and interoperable communication protocols without the need for human involvement. IoT does not include phones, tablets, or computers**.**

III. VISION

"To develop connected and smart IoT-based system for our country's Economy, Society, Environment and global needs. "

IV.OBJECTIVES

1. To develop a USD 15 billion IoT sector in India by 2020. By 2020, the number of linked devices will have risen from roughly 200 million to over 2.7 billion. According to a Gartner research, the IoT market will produce $300 billion in sales by 2020, with 27 billion linked devices worldwide. India is expected to have a 5-6 percent market share in the worldwide IoT business.
2. To create human and technological capacity for IoT-specific skill sets for domestic and international markets.
3. Carry out research and development on all assisting technologies.
4. To create IoT products tailored to Indian demands in agriculture, health, water quality, natural catastrophes, transportation, security, automobiles, supply chain management, smart cities, automated metering and monitoring of utilities, waste management, Oil & Gas), and other areas.

INTRODUCTION

The twenty-first century is making strenuous efforts to conserve electrical energy. Because lights are necessary but costly, it is necessary to optimize the system so that it is both economical and energy efficient. Controlling the lights manually is a time-consuming and difficult operation. Working in this manner can lead to large-scale tragedies and destruction. The biggest issue with manual light controls is that they waste a lot of time talking during evening periods when they are supposed to be turned on, and they waste a lot of energy in the morning since they can't all be shut off at the same time. Another example of waste is when lights are turned on at full power at midnight. The theory behind this is fairly simple: when the temperature is high, turn on the fan; when the temperature is low, turn off the fan. This increases or decreases the resistance value. This method is unique in that it saves a significant amount of time and energy. As a result, a new way of automatic fan speed management employing temperature sensors can be developed. Regulators can be used to control the speed of commonly used fans, however this is an antiquated and inconvenient way. And when the temperature must be monitored over lengthy periods of time, this method becomes inefficient. Create a product or hardware that can regulate the fan's speed dependent on temperature.
The digital visitor counter is a dependable circuit that takes over the responsibility of properly counting the number of people in the room. When someone enters the room, the counter is increased by one, and when someone exits the room, the counter is decreased by one. On liquid crystal displays, the entire number of people in the room is presented.
The microcontroller is responsible for receiving the signals from the sensors mentioned above. A microcontroller, IR and photodiode, and LCD are used in this project. The IR sensor continuously generates a signal, which is observed by the photodiode. If any barriers appear between the IR and the photodiode, the photodiode output is given.

LITERATURE SURVEY

Many projects for smart control of electrical equipment in public locations, such as shopping malls and theaters, are underway. Various technologies have been employed to do this, with the basic goal of conserving energy. The following are a few projects comparable to ours that employed

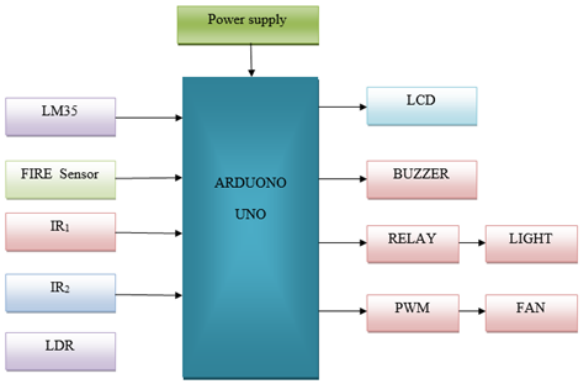
microcontrollers as the foundation.

The major goal of this study is to design and implement energy-saving measures in public spaces such as auditoriums, shopping malls, and theaters. A human or a controlling system is required to control and monitor all of these devices or appliances. This document discusses the whole operation of electrical and electronic devices in theatres, shopping malls, and auditoriums, including automatic control and power-saving. To do so, they used an MCS 51 microcontroller, IR sensors/LDR (Light Dependent Resistor), and a 16X2 LCD (Liquid Crystal Display). The complete operation is controlled by a Microcontroller from the MCS 51 series. In our project, we used Arduino to create a control system that is easier to use than other microcontrollers.

They proposed a technique to analyze the power usage in the gathering hall/auditorium by building a visitor counter and an automatic fan control system in this research study.

The primary goal of this study is to conserve energy. Manual control methods are preferred over automatic control systems. Controlling electrical and electronic gadgets, appliances, and other devices is possible with the design of power control and saving projects. We attempted to demonstrate a clever technique to control power usage and save energy in auditoriums, shopping malls, and theaters, among other places, with this project. We now have retail malls, theatres, and auditoriums in all cities and suburbs. Monitoring and managing appliances becomes extremely important in these situations. If there are fewer individuals in the auditorium, there is no need to turn on all of the equipment. There will be a loss of power if all of the devices are turned on. If the auditorium fills to capacity, all of the equipment will automatically switch on.

BLOCK DIAGRAM:



SYSTEM REQUIREMENTS

HARDWARE REQUIREMENTS:

Processor: Any Processor above 500 MHz.Ram: 4 GB Hard Disk: More than 256 GB

Input device: System Camera

Output device: High-Resolution Monitor.

- ARDUINO UNO
- Power supply
- LM35
- Fire sensor
- IR sensor
- LDR
- 16*2 LCD
- Buzzer
- Relay
- 12V LED light
- Fan

SOFTWARE REQUIREMENTS:

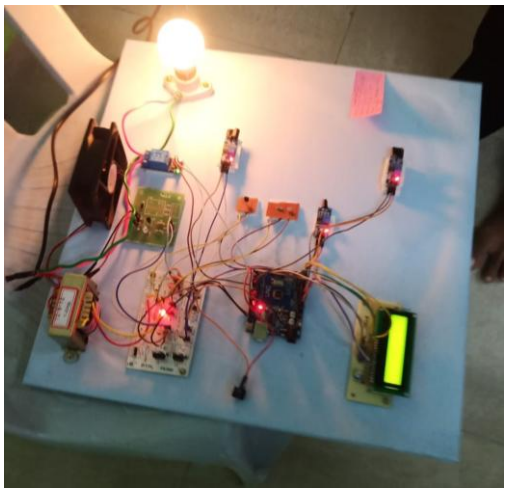
- ARDUINO IDE
- C- Language

EXISTING METHOD:

The whole operation of electrical and electronic devices in theatres, shopping malls, and auditoriums with automatic control and power-saving. We utilized an MCS 51 family microcontroller, IR sensors/LDR (Light Dependent Resistor), and a 16X2 LCD to accomplish this (Liquid Crystal Display). The complete operation is controlled by a Microcontroller from the MCS 51 series. These projects are well-known for the MCS 51 family of microcontrollers.

PROPOSED METHOD:

The system's operation begins with the detection of people entering the auditorium and keeping track of the number of people there. This number is the control parameter for fan-like devices. The metal detector and buzzer at the entrance gate will both be turned on to detect the presence of metal. The entry sensor and exit sensor are placed at the entrance and exit gates to detect people entering and exiting the auditorium, sending a signal to the microcontroller that displays the number of people inside on the LCD panel. When a person walks into the theater, the path light directs them to a vacant seat starting in the first row. The temperature sensor in the auditorium detects the temperature and generates a temperature-related voltage that controls the fan's speed inside the auditorium.



CONCLUSION

The primary purpose of the project is to save energy that is wasted in the auditorium when it is empty due to the fan running. The guidance system is a simple technique that is eventually used in order to save energy. Security is provided via the metal detector at the entrance gate. Our system's cornerstone is the Arduino controller, which handles everything from sensing input and output to turning on the fan and adjusting its velocity based on temperature. To keep the system working smoothly, a continual power source is required.

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