**An Automatic Body Sensor System to Check Temperature in a Smart Education Campus Based On IOT Architecture**

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**ABSTRACT:-**The Internet of Things (IoT) has brought many positive changes in our lives. In addition to areas such as industry, Smart cities, Transport, Health, Agriculture and various other areas, IoT will also have a large organization at universities or colleges. In this age of digital transformation, IoT technology can be used to maintain a smart and secure environment in a university or college. The purpose of this project is to focus on how the IoT plays an important role in building a smart Education campus and studying the challenges in its implementation. In the proposed project sensor gets the temperature of the students automatically through wireless connection via Bluetooth, the hardware consists of a microcontroller and module, software cloud services are monitored.

**Keywords:** Covid19, Temperature, Sensor

**I. INTRODUCTION**

Coronavirusfound mainly in Wuhan, China, has spread rapidly to many countries, including India, the world's second most populous country with a population of over 134 billion [20], [21], [22]. India could have a problem in avoiding the spread of coronavirus. Facial masks and sanitizers are the most active ways to reduce infections. To reducing the transmission of disease, this has exposed positive outcomes. Most of the time, it is broadcast indirectly in many places. The developmenttime can be very high, ranging from 10 to 14 days in severe cases, and the virus can spread straight (from person to person) through respirationaldewdrops [2]. Governments have used a variety of preventive and preventive measures to reduce the spread of disease, including segregation of people, forced indoor face mask, confinement, restrictions on civilian movement within national and foreign borders, segregation, segregation and the withdrawal of major events and public meetings[10]. All kinds of gamesare all affected by the COVID-19 epidemic [4]. People with the flu should not be allowed to enter commonareassince they are at morehazard of contamination and the spread of the virus and sowearisome a mask is important. At the doors of any city, workrooms, supermarkets, and hospital entries, infectiontests are also required. This proposed method automatically displays a person's body temperature on entry is improved. Improved vision is used in this arrangement to several factors including fever identification.

The COVID 19 epidemic is causing a lifelong widespread. The most effective protection is a sensitive face cover in common areas. COVID 19 has required regulators around the world to use lockdown locks to prevent the spread of the virus. Based on research reports, wearing a face mask in open areas minimizes the threat of further spread. In this paper, an intelligent educational center powered by IoT uses a model to assess fever identification. This can be used by educational institutions. As a result a commercial and reliable way to use AI and nerves to create a strong atmosphere. In addition, each student's body temperature is monitored using an unaffected temperature sensor. This proposed system could identify COVID 19 users by assisting Internet of Things (IoT) technology.

Colleges and universities can benefit in many ways, including:

• **Easy access to student information as well as temperature**. An effective document management system significantly reduces the time spent by staff searching for information. Student records are organized, and easily available. Staff have more time to focus on helping students which improves the student experience.

• **Increased security**. The records management system allows colleges to protect important student records and other sensitive information. Participants can easily assign appropriate users and block unauthorized users.

• **Reduced costs.** With Enrolment, colleges need to find new ways to reduce their operating costs. The document management system removes huge costs for paper, ink, and storage. And since documents are easily accessible, there are no inefficiencies and additional costs for obtaining or reproducing a lost document.

• **Environment**. Many students are committed to natural causes and urge their institutions to have an eco-friendly nature. With a text management system, no paper is spilled. And with cloud-based document management and / or business process management (BPM) solutions, students significantly reduce there energy use.

**II. RELATED WORK**

The essential of body temperature testing in clinical analysis and treatment cannot be exaggerated [23], [24], [25]. There are other disadvantages, which include low measurement exactness and long measurement time. Indigenous performance measures make it hard to find a patient's body temperature robotically and exactly. To solve the problem, they introduced a centralized monitoring scheme that is used to find body fever.

Immediatestatistics is important in the area of public health [11]. This paper explains how to track a person's heart rate per second and find the normal body temperature away. Reduce the power consumption of the device by starting the device with the remote-controlinstruction from the delivery PC [26], [27], [28].

The function of the Radiocommunication Neighborhood Network in a growing use that includes sensory vessels, medicinaluses, accommodation monitoring, and seismic investigation was examined [5, 17]. Wireless Sensor Network recently focused on local tracking and market utilization. The effectiveness of the WSN models created by the PIC is established in this project. To establish sensory events, common temperature sensor nodes are used in networks.

By performing tasks such as presentchasing and post-event study, video statistics enhance video surveillance resources [6]. People will save time and money, and the performance of the monitoring system will improve. The paper describes the concepts behind these processes, as well as the most commonly used human acquisition and facial recognition methods. This new approach to problem solving has created a very simple solution that can be implemented in real time. The success of the algorithm in checking the video sequence provides important information to improve the efficiency of hidden face detection.

The Haar Cascade algorithm for online features of low-cost features was used using the Raspberry Pi method [13]. It is an advanced access control system.

## New incident studies show two home safety precautions and resource planning as evidence of performance during a deadly epidemic. Compatible applications for most mobile platforms are built using the Application Sheet Framework[20].

### III. HARDWARE REQUIREMENTS

**3.1. Raspberry Pi**

The Raspberry Pi is ainexpensive price computer that links to a computer or television monitor as well as works with a standard input devices as shown in Fig. 1 [8]. It is a small useful device focused on coachingindividuals about writing languages ​​such as Scratch and Python. It will do all computer activities, such as browsing the Internet and playing games. It is used on a number of digital pheripheralstogether withchirping birdhouses, musical instruments, and detectors, along with weather stations and IR cameras as they are able to communicate with the externallocation.



Figure 1. Raspberry Pi

**3.2 R pi Cam (Raspberry Pi Camera)**

The 8-megapixel Raspberry sensor Pi camera is used for this task. This contains 1080p30, 720p60, and 640x480p90 video support and adjustment support for 3270 × 2444 pixels. Figure 2 shows the Raspberry Pi camera module. Stable lens and Sony IMX219 image sensor designed for R Pi as a board extension. The Pi module is connected to the RPi by one of the small board ports in the upper part, and uses a special CSI GUI, designed specifically for camera communication.



Figure 2. Raspberry Pi Camera

**3.3 IR sensor**

IR sensors are used to calculate and display the quantity of persons entering and leaving a room. The operating voltage of the IR sensor is 5VDC. Fig. 3 shows an InfraRed sensor that incorporates ain-built light sensor with an ascending hole, and an modifiable sensor.



Figure 3. IR sensor

**3.4 Temperature Sensor**

Temperature sensor operates as an unobtrusive IR temperature reader that reads temperature without contact. A sound reduction thermometerand a powerful DSP unit are used that help achieve greater accuracy.



**Fig 4. Temperature Sensor**

**CHALLENGES INVOLVED IN IOT ARCHITECTURE**

* + Use of IoT – based applications are continuously growing vertically as well as horizontally. Due to evolving technology, there will be a need to update the devices & equipment. This will increase the cost, so Universities need to come with new ideas for finance including research in low-cost technology.
	+ Privacy & Security – IoT environment stores data on Internet based network. So, privacy and security issues become very crucial. The private information about the financial background of the family, medical records, and student’s progress should not be disclosed in any case. There is a need of high level of Encryption techniques to avoid the data from hacking.
	+ Energy efficiency - Lastly, additionalvital challenge of IoT- enabled smart campuses is the power source and energy efficiency. Smart grid and solar based system can be used for efficient management and control on energy usage.

**BRIEF EXPLANATION OF THE CAMPUS ARCHITECTURE**

• **Server Module** - The first module contains a server, a status display board - The server can be considered the heart of the campus management system. The server captures, collects, stores and processes data generated in sensitive mode. The generated data will be stored using a specific data management system. The Dash Board can be used as a notice board where all the required information is displayed.

 • **Connection module** - LAN, Wi-Fi, Bluetooth, mobile network. The IoT system can use an individual or combination of network technology to transfer data to a server. This data is processed and the microcontroller sends a signal that operates through these networks.

• **control frequency module** - has a variety of sensors, transmitters and actuators. Hundreds of continuous sensory devices will monitor the environment e.g. Temperature sensors, Motion sensors, RFID, IR sensor, Cameras.

 • **Application module** - Application layer is the final layer that will receive and process information for various applications specific to specific applications.

**Server**

**Connection**

LAN

WIFI

BLUETOOTH

ETHERNET

**Database**

**Application**

**IV.CONCLUSION**

Today's students need experience in a seamless college enrolment program and in need of sensor temperature automatically in this pandemic situation. In an increasingly competitive and dynamic environment, colleges and universities need to find new ways to improve the college enrolment system. Eliminating manual and paper-based documentation processes helps colleges save money, boost productivity, increase compliance, and provide superior student experiences. Organizations can eliminate these costs with automation technologies such as an electronic document management system and business process automation solution. These solutions allow colleges to store student records in one secure and centralized location.

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