

# SURVEY ON IOT-BASED CELL PHONE DETECTION IN EXAM

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## ABSTRACT

This project proposes a technology to detect a cellphone that is being used by a restricted user in a restricted area, and also show the location of the user, to prevent the user from continuous use of the cellphone. the right number is checked. However, it is often busy and take time for an outsized number of scholars.

Therefore, to avoid this problem, automated detection and identification of phones has been integrated. Currently there are mobile jammer to jam the whole network, but only to seek out cell phones of scholars who have been present within the exam hall there. It automatically detects the activity telephone within the e-hall and displays this information with the mobile detector on the remote computer (administrator) within the GUI until it detects the message, room number, location, etc.

That is, it determines the precise place. Calculates the space between position (detected) and detector, identifies increasing boundaries, and adds new dimensions to rooms like remote computers, switching from one room to a different one.

**Key Words:** Data Analytics, Cheating Prevention, Computer Vision, Machine Learning in IoT, CST, mobile phone detection, multi-band antenna and single-dipole antenna.

## 1. INTRODUCTION

This project proposes a technology to detect a cellphone that is being used by a restricted user in a restricted area, and also show the location of the user, to prevent the user from continuous use of the cellphone. the right number is checked. However, it is often busy and takes time for an outsized number of scholars. Therefore, to avoid this problem, automated detection and identification of phones have been integrated. Currently, there are mobile jammers to jam the whole network, but only to seek out the cell phones of scholars who have been present in the exam hall there. It automatically detects the activity telephone within the e-hall and displays this information with the mobile detector on the remote computer (administrator) within the GUI until it detects the message, room number, location, etc. That is, it determines the precise place. Calculates the space between position (detected) and

detector, identifies increasing boundaries, and adds new dimensions to rooms like remote computers, switching from one room to a different one. The centralized nature of the system allows for comprehensive coverage and coordination across multiple examination rooms, ensuring that no area is left unmonitored. The IoT-based architecture enables remote access and control, allowing administrators to oversee multiple examination centers from a single control point. This not only enhances security but also reduces the burden on human invigilators, leading to a more efficient and secure examination process. This system leverages IoT technology to create an intelligent, monitoring network capable of detecting unauthorized mobile devices within the examination hall.

## 2. LITERATURE SURVEY

SR	AUTHOR	DESCRIPT ION	ADVANTAGE S	DISADVANTAGES
1.	<b>IEEE: Zhen Cheng</b> Signal detection of mobile. (2023)	Detection of cheating behaviors in examination halls using IoT.	Increased detection accuracy, real-time monitoring	The system relies on stable internet connections
2.	<b>IJSGS: Jude Umole</b> Testing of cell phone detector. (2023)	Enhancing security in examination halls via IoT	Improved identification of unauthorized activities	software bugs, can disrupt exams and create chaos.
3.	<b>Research: Kiran Kumar Humse</b> Cell-phone, Arduino uemilanov	Preventing cheating in exams using IoT devices	Reduced instances of cheating, improved exam integrity	The system can be complicated and time-consuming

### 3. RELATED WORK

Detection of Active Mobile Phones in Exam Hall. Et.al. Najla Aiman Nazar, Ili Najaa Aimi Mohd Nordin, Muhammad Rusydi Muhammad Razif, Noraishikin Zulkarnain and Nurulaqilla Khamis. This paper stated that the use of mobile phones as cheating tools in examination halls among students has considerably increased the burden on invigilators to ensure integrity in the examination hall. Many active mobile phone detection schemes have been proposed to solve this problem. However, the detection system functions in a small detection range of 1.5 to 2 meters from the detection circuit and does not distinguish various frequency bands of radio frequency signals. An antenna is proposed to be used to have a diverse range of RF mobile phone signal detection for alerting the invigilators of their specified monitoring region. This is done by antenna design simulation using Computer Simulation Technology (CST) software. Two types of antenna; single-dipole antenna and multi-band dipole antenna are simulated to know the characteristics of VSWR, gain, and total efficiency. From the simulation results, the multi-band dipole antenna shows acceptable VSWR values which are approximately 2 V, the gain is equal to 2.85 dB and the total efficiency is equal to 2.484 dB for a 2.4 GHz signal. The results imply a positive event that a multi-band antenna can be a preferable tool in elaborating accurate RF signal detection of active mobile phones in the examination hall.

Using CNN to Detect the Use of Mobile Phone in Examination Rooms. Et.al. Reuben Moyo; Stanley Ndebu; Michael Zimba. This paper explained that in recent years, the automotive industry has seen significant advancements in the field of computer vision and artificial intelligence, leading to the development of innovative solutions for car damage identification and categorization. Accurate and efficient assessment of vehicle damage is crucial for insurance claims processing, vehicle maintenance, and resale value estimation. This abstract provides an overview of the key components and methodologies involved in car damage identification and categorization using computer vision and machine learning techniques. The proposed system

Exams play a crucial role in the learning process, and academic institutions invest significant resources to ensure their integrity by preventing cheating by students or facilitators. Unfortunately, cheating has become rampant in exam environments, compromising their integrity.

1) IoT-Based Cell Phone Detection in Exam using Arduino duemilanove. Et.al. Kiran Kumar Humse, Chethan K Mahadevaswamy, and Sudheesh.K. V. This paper informed that this paper proposes a technology to detect a cellphone that is being used by a restricted user in a restricted area, and also show the location of the user, to prevent the user from continuous use of the cellphone. The right number is checked. However, it is often busy and takes time for an outsized number of scholars. Therefore, to avoid this problem, automated detection and identification of phones have been integrated. Currently, there are mobile jammers to jam the whole network, but only to seek

out the cell phones of scholars who have been present in the exam hall there. It automatically detects the activity telephone within the e-hall and displays this information with the mobile detector on the remote computer (administrator) within the GUI until it detects the message, room number, location, etc. That is, it determines the precise place. Calculates the space between position (detected) and detector, identifies increasing boundaries, and adds new dimensions to rooms like remote computers, switch from one room to a different.

### 4. PROBLEM STATEMENT

In recent years, there have been increasing issues relating to the use of mobile phones and cameras in restricted areas. The mobile phone provides many ways for a student to cheat in an examination hall. Mobile phones are strictly prohibited inside the examination rooms. One of the existing approaches is to ensure the students are free of mobile phones in the examination hall by manual inspection at the entrance. Manual inspection cannot fully reveal the students have mobile phones all the time. These devices will ensure the connectivity between a student sitting inside the hall and outsiders have considerably increased the burden on invigilators to ensure that malpractices are not committed during exams.

### 5. OBJECTIVES

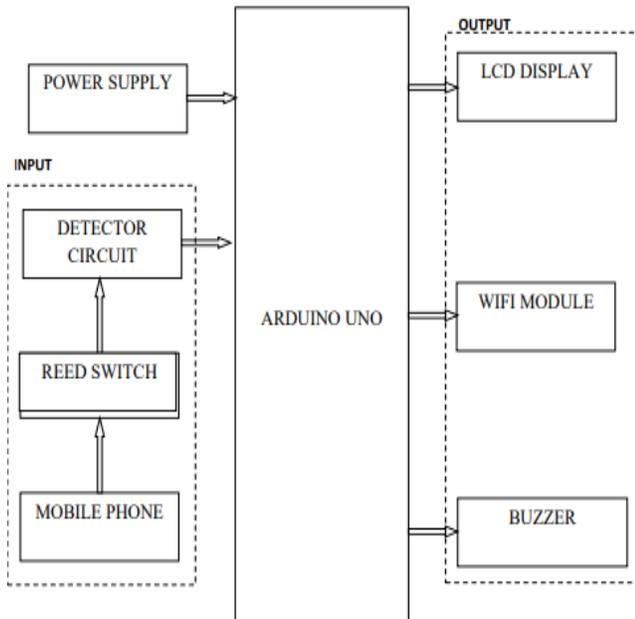
The detection of signals that are emitted from hidden wireless cameras, microphones, and mobile phones. Here we try to prohibit the unauthorized use of mobile phones by using a detector, that senses the presence of activated mobile phone signals radiated by them and also the wireless camera which radiates RF signal. Efforts have been put in place to tackle this issue but they all have their shortcomings. The circuit can detect the signals during video or audio transmission from hidden cameras and microphones as well as incoming calls and outgoing calls, messages, and video transmission from mobile phones.

### 6. METHOD OF IMPLEMENTATION

- In our day-to-day life the usage of mobile phones has increased in restricted areas such as exam venues, places of important meetings, offices, conference halls, prisons, etc., and the hidden wireless cameras in trial rooms and hotels, public toilets.
- The radio frequency signals are transmitted from wireless cameras and mobile phones during the video transmission, incoming calls and outgoing calls, and text messages from one gadget to another. The detector will detect the transmitted signal and then it is given as input to AT mega 8 microcontrollers.
- As soon as the Arduino microcontroller receives the signal, it will turn ON the beep alarm and the information will be displayed on the LCD and also sends messages like mobile detected with location, room number, etc. to the mobile number stored in the microcontroller by using the GSM module.

- This system will be used to detect the mobile phones and the wireless hidden camera present in a room by the radio frequency signals that are transmitted by them.

## SYSTEM ARCHITECTURE



## WORKING

The presence of an activated mobile phone from a distance of one and a half meters can be sensed using the mobile detector. So it is designed as a handy device for easy carrying and usage in an examination hall or meetings where whole phones are prohibited. The incoming and outgoing calls, SMSs, interest, and video transmissions are detected by this technique even if a cell phone is kept in silent mode. The radio frequency that radiates out from a cell phone is any electromagnetic wave frequency that lies in the range extending from around 20kHz to 300 GHz, roughly the frequencies used in radio communications. When the detection of the RF signal from an activated mobile phone is done, its LED starts blinking and continues to blink until the signal stops. Simultaneously along with the detection phase, the notification message is also transferred to the authority in charge of security via the Android mobile application. The detection and message transmission through the Android application are described below.

## 7. METHODOLOGY

Developing the “IoT-Based Cell Phone Detection in the exam” involves designing a robust system architecture that integrates IoT sensors capable of detecting mobile signals such as GSM, Wi-Fi, and Bluetooth within the examination hall. These sensors will be strategically deployed to a centralized

server or control room and processed and analyzed. The system will also include an alert mechanism that notifies authorities immediately upon detecting any unauthorized mobile device, thereby ensuring a secure examination environment.

## 8. CONCLUSION

In today’s scenario as the advancement in technology is increasing the misuse of it also growing. These problems can easily be avoided by using a cell phone detector. The mobile detector is a cheap technology that has a wide scope and good availability in the future which we have used to protect the privacy of people. In this circuit, we use some basic terminology and concepts of electrical and electronics engineering and some simple equipment. As experiments are never die and ideas are never stopped so there also a possibility of improvement in this system.

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