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AI-Based Smart College Monitoring and Alert System

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ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

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Abstract :

Although campus safety and discipline management are crucial duties in educational institutions, traditional monitoring techniques mainly rely on staff supervision by hand, which frequently leads to delays, oversight, and decreased efficiency. This project presents an AI-Based Smart College Monitoring and Alert System that offers automated real-time surveillance for student activities and emergency situations in order to get around these restrictions. By recognizing student gestures and screen illumination patterns, the system employs camera-based AI models to identify unapproved mobile phone usage during class hours. In order to help maintain classroom discipline without the need for constant manual monitoring, an instant alert message is automatically sent to the relevant class teacher once it is detected. The system also includes an intelligent fire detection module that examines visual indicators like flame and smoke patterns. The college administration receives an instant warning message in the event of a fire to facilitate quick action and safety precautions. For transparency and review, all monitoring outcomes, alerts, and system actions are recorded and accessible via a central dashboard. All things considered, the suggested system guarantees faster decision-making through AI-driven automation, improves campus safety, and lessens staff workload.

Key Words: Automated Alert System, Smart Campus Monitoring, YOLO, Mobile Phone Detection, Fire Detection,AI Surveillance.

1.INTRODUCTION

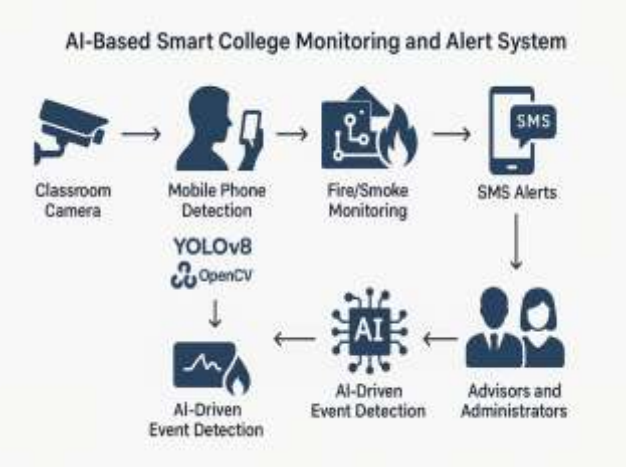
The quick development of technology presents educational settings with both opportunities and difficulties. Even though cell phones are now necessary tools for students, using them excessively during class causes distraction, poor academic performance, and disciplinary problems. Due to staffing shortages and manual supervision techniques, colleges frequently find it difficult to monitor student behavior consistently across classrooms.**I**n a similar vein, maintaining campus safety is essential, particularly when it comes to averting fire incidents. Many organizations only use hardware sensors, which may not be able to detect flames in time or may malfunction because of technical issues. Artificial intelligence-based autonomous surveillance systems are therefore becoming more and more necessary.

This project introduces an AI-Based Smart College Monitoring and Alert System that uses deep learning to instantly identify fire incidents and mobile phone usage. The system uses YOLO-based object detection to process each frame of live video feeds from classroom cameras. When an incident is detected, it immediately notifies the relevant authorities. The system's objectives are to automate monitoring of classroom discipline ,automatically detect cell phones during class ,identify fire or smoke in campus buildings provide real-time Email alerts with location and images reduce human workload and improve response efficiency**.**This AI-powered system is a crucial step in turning conventional universities into intelligent, secure, and technologically advanced campuses.

2. Body of Paper

1. Architecture of the System

Video input processing, AI-based detection, decision-making, and automated alert delivery are all integrated into the system architecture. The main elements consist of:



1.1 Module for Video Monitoring

Live video is continuously captured by cameras placed in classrooms and hallways. The AI detection modules use these video frames as input.

1.2 Mobile Phone Detection Module

To identify students using mobile phones, a deep learning model (like YOLOv8 or Faster R-CNN) is trained. The model recognizes the following: phone in hand, phone close to the Face, and suspicious gestures that seem to indicate mobile usage. When an event is detected, the System logs it and moves on to the alert module

1.3 Module for Fire Detection

This module detects smoke or fire using computer vision algorithms. It examines pattern like abrupt changes in illumination, smoke motion, and flame color patterns. Once fire is detected, the system immediately escalates the alert

1.4 AI Engine for Making Decisions

The engine operates: Verification of the confidence threshold; classification of events; and escalation of alerts (teacher/admin). Recording events that are detected.

1.5 Automated alert system Automated Warning System alerts are sent via email, and (optionally) WhatsApp notifications. Examples include: "A student as found using a cell phone in Class 2A." and "Fire detected in Laboratory Block – Immediate Action Required" → Sent to the instructor.

1.6 Logging Data and Monitoring History

Every event that is detected is saved with location (classroom/campus area), timestamp,

screenshot of detected activity, and identified person or object. This facilitates audits and offers transparency.

2 Literature review

The growing role of AI in educational safety and monitoring is highlighted in a number of recent works

1. To detect students' inattentive behavior, Gupta et al. created a computer vision-based classroom monitoring system. Their research demonstrated how automated detection using AI can enhance academic discipline.

1. An AI model for identifying cell phone use in prohibited areas was presented by Sharma and Rao. Their study showed low reliance on surveillance personnel and high accuracy.

2. Using CCTV footage, Li et al. developed a deep learning method for fire detection that proved to be quicker and more dependable than conventional smoke sensors.

3. Mehta et al. emphasized automated emergency communication in their discussion of the significance of real-time alert systems in institutional safety infrastructures.

3 Methodology

3.1 Gathering and Preparing Data

Images from classrooms were used to create a dataset on mobile phone usage. Open datasets (Kaggle, public fire image sets) were used to create a dataset on fire detection. Frames were cleaned, resized, and annotated.

Model Training

Two models were trained using Yolov8 for real-time object detection.
Fire Detection Model Mobile Phone Detection Model.

3.2 Control and Execution of Patches

Every second, live video frames are recorded and sent to the detection models.

3.3 Classification of Events

Capture a video frame from an IP camera, resize and enhance it, run YOLO inference, check the detection confidence, trigger an alert if a mobile phone or fire occurs, and save the detection
snapshot in the logs.

3.4 Alert Generation Using the SMPT Server

The administrator receives fire alerts with an image ; the teacher receives alerts about phone misuse; and the information is recorded in the event history.

3.5 History and Preview

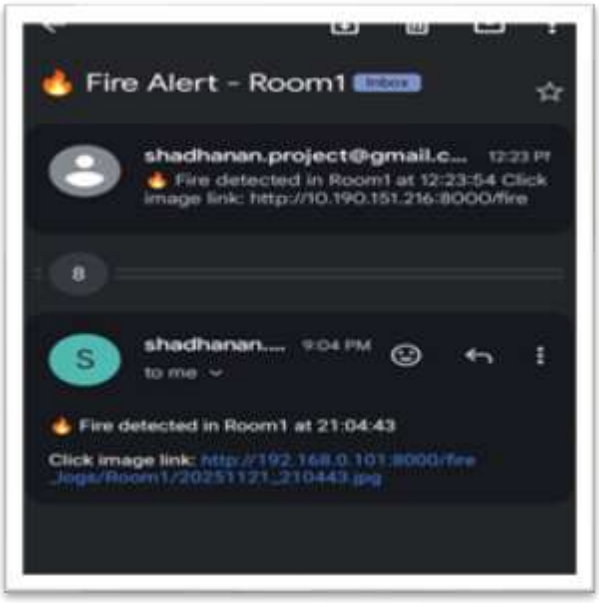
It shows alert history, detected events, and live video preview

4.WORKFLOW

4.CONCLUSIONS

The AI-Based Smart College Monitoring and Alert System effectively automates college surveillance by instantly identifying fire incidents and cell phone abuse. It lowers manual intervention, improves security, and guarantees classroom discipline by combining deep learning with automated alert systems. Future enhancements include integration with biometric systems, expanding detection to include acts of violence or ragging, adding face recognition to identify a specific student, creating a mobile app for administrators and teachers, cloud-based centralized monitoring for large campuses, and identifying unwanted wandering around the corridors while class is in session.And also smart monitoring invigilator in exam hall. This system is a step toward turning conventional universities into intelligent, AI-driven establishments that put safety and discipline first.

RESULT:



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REFERENCES

1.Poonam Rajput et al., "Detecting Usage of Mobile Phones using Deep Learning Technique,"
GOODTECHS Conference, 2020.
2.K. C. Khemnar et al., "Fire Detection Using Deep Learning," IJSRSET, 2021.
3. Harish S. Gujjar, "Real-Time Video-Based Fire Detection Using Deep Learning," IJSRMT, 2025
4.Aigulim Bayegizova et al., "Fire detection using deep learning methods," IJECE, 2024.
5.Singh and Patel, "AI-Based Surveillance Systems for Smart Campuses," IEEE SmartTech Conference,2022