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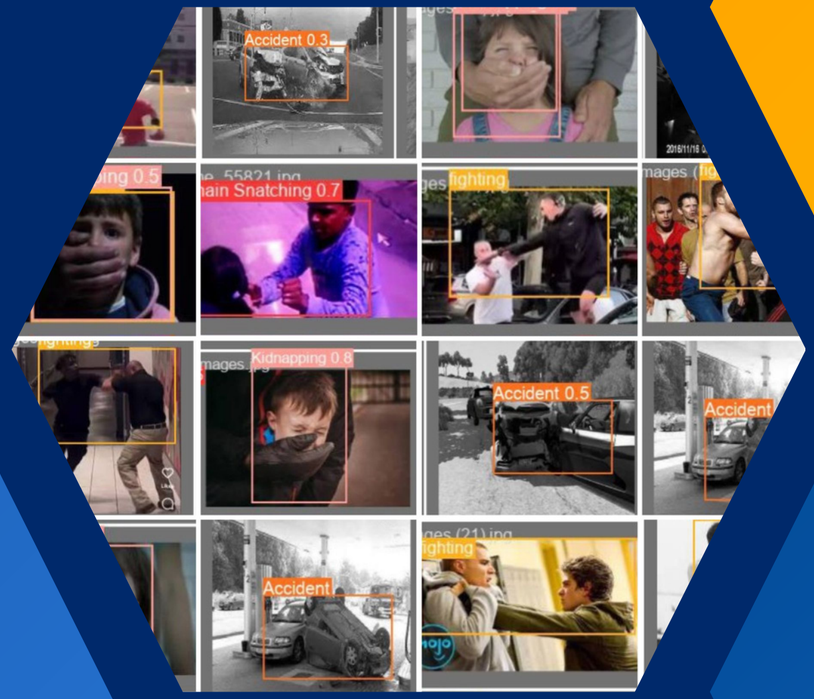
ABNORMAL EVENT DETECTION ON PATHWAY



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ABSTRACT

In an effort to enhance road safety and to prevent accidents, this project focuses on developing a system to detect abnormal activities on roads in real-time. With YOLOv8, an object detection model, is our approach which aims to identify various irregularities such as accidents, reckless driving, and pedestrian crossings. Through a comprehensive training process and fine-tuning of the YOLOv8 model, we adapt it to the specific requirements of road safety monitoring.The training of the YOLOv8 model using a curated dataset of road surveillance footage, along with the integration of the model into our system architecture. Real-world testing and validation are performed in detecting abnormal activities accurately and efficiently.

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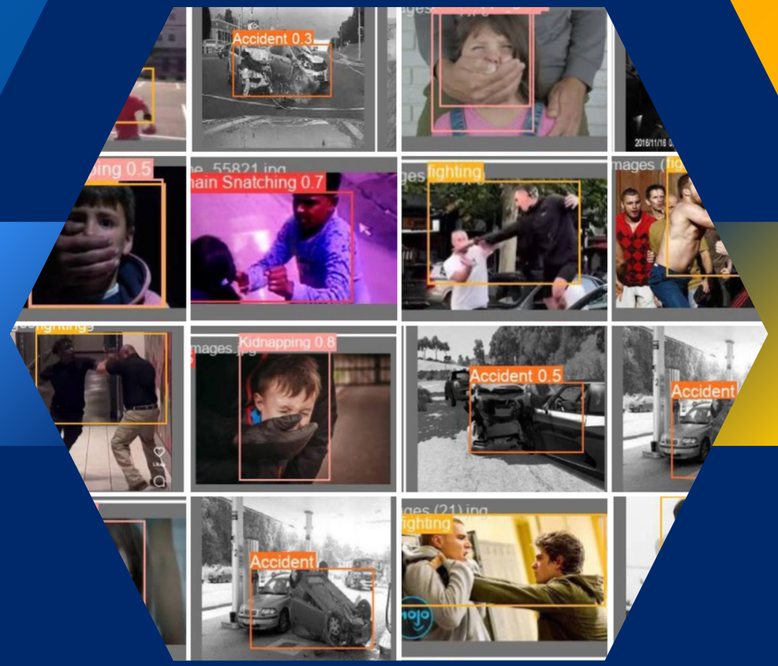

INTRODUCTION

Our project aims to enhance abnormal event detection on the roads by integrating event detection with CCTV cameras. By leveraging advanced computer vision techniques and deep learning models, we created a real-time system that can identify and respond to specific events of interest, such as accidents, Chain snatching, Fighting, and Kidnapping.

OBJECTIVES

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1. Collect sensor data from pathways
2. Preprocess data into usable features
3. Train model to recognize normal event patterns
4. Detect abnormal event in real-time with model
5. Trigger alerts when abnormalities are detected

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EXISTING SYSTEM

- Manual inspection and analysis of pathway data by human experts to identify anomalies.
- Rule-based systems that flag certain pathway value ranges or patterns as abnormal based on predefined thresholds.
- Simple statistical techniques like control charts to detect out-of-range pathway metrics.
- No existing dedicated system, and abnormal events are going completely undetected currently.

Disadvantages of Existing System

- Manual video monitoring systems heavily rely on human operators.
- Existing systems may not be designed to scale seamlessly to handle large numbers of video sources or high-resolution video streams.
- Manual monitoring or slow processing times in rule-based systems can lead to delayed detection and recording of events.
- Traditional systems may lack advanced data analysis capabilities, making it challenging to extract insights.

Proposed System

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- Developed a system that automatically analyzes uploaded videos to identify unusual occurrences.
- Utilized OpenCV, a computer vision library, to process video data, including object detection (using YOLO) and feature extraction to understand scene content.
- Compare identified objects and movements to established patterns of normal behavior, flagging deviations as potential anomalies.
- Designed a user-friendly web interface for uploading videos, interacting with the system, and visualizing detected anomalies (e.g., timestamps or highlighted sections).
- Integrated cloud storage to ensure scalable storage of uploaded videos and analysis results for later retrieval or visualization.

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Advantages of Proposed System

- The YOLO object detection model used in the system is highly accurate and reliable, minimizing false positives.
- The system captures video frames before, during, and after an event, providing a complete context and evidence.
- The system can generate alerts and notifications upon event detection, enabling remote monitoring and immediate notification .
- The system provides a user-friendly interface for monitoring live video streams, accessing recorded clips, and filtering events.

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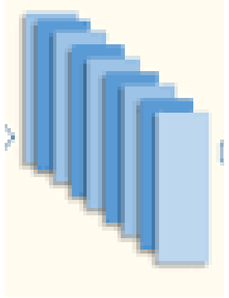
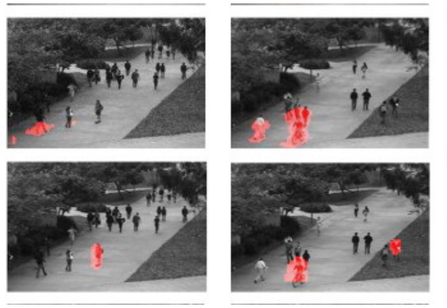
CCTV PHOTAGE

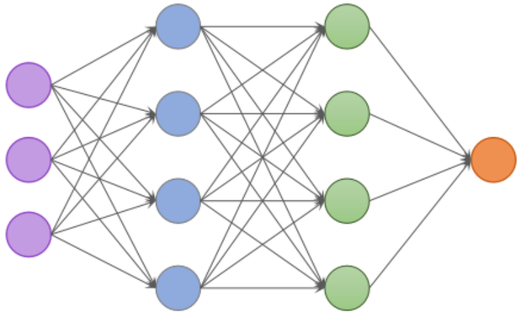


VIDEO FRAMES

DATA
PROCCESSING



ABNORMAL EVENTS



CNN MODEL

ACCIDENT EVENTS

SYSTEM CONFIGURE

ARCHITECTURE

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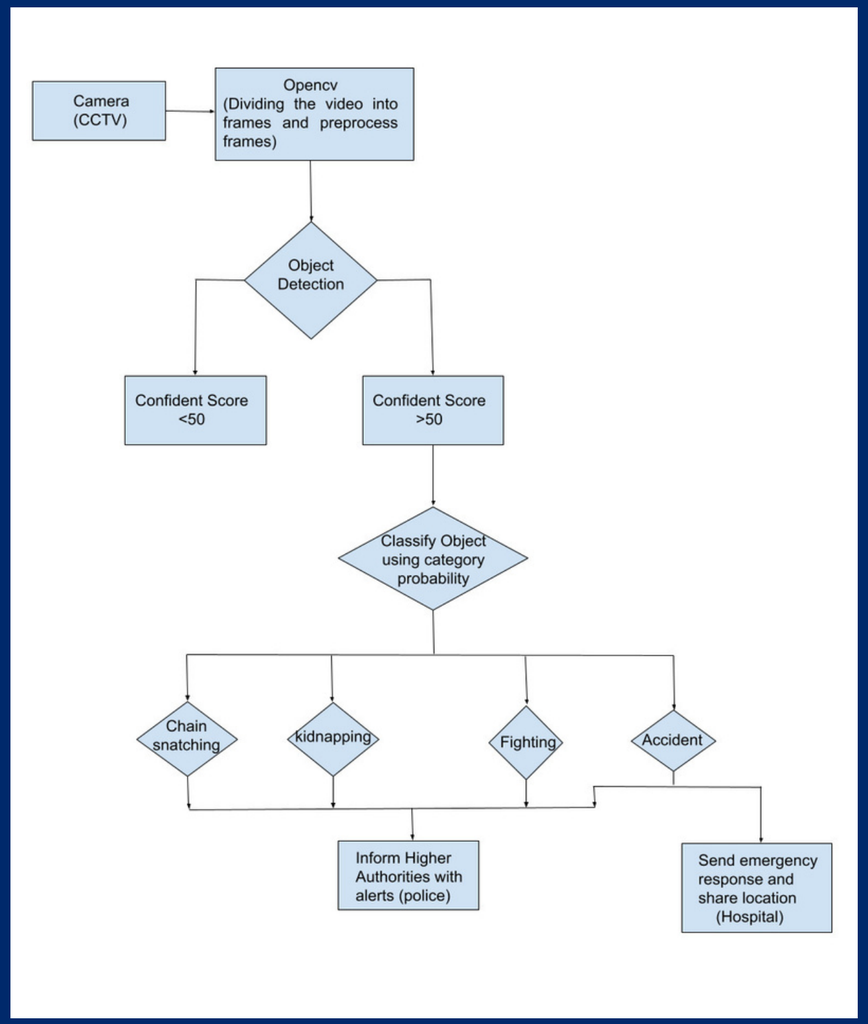

WORKFLOW OF THE SYSTEM

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TECHNOLOGIES USED

- Python
- Flask
- Cloudinary
- OpenCV
- YOLO V8
- Wtform
- Html and CSS

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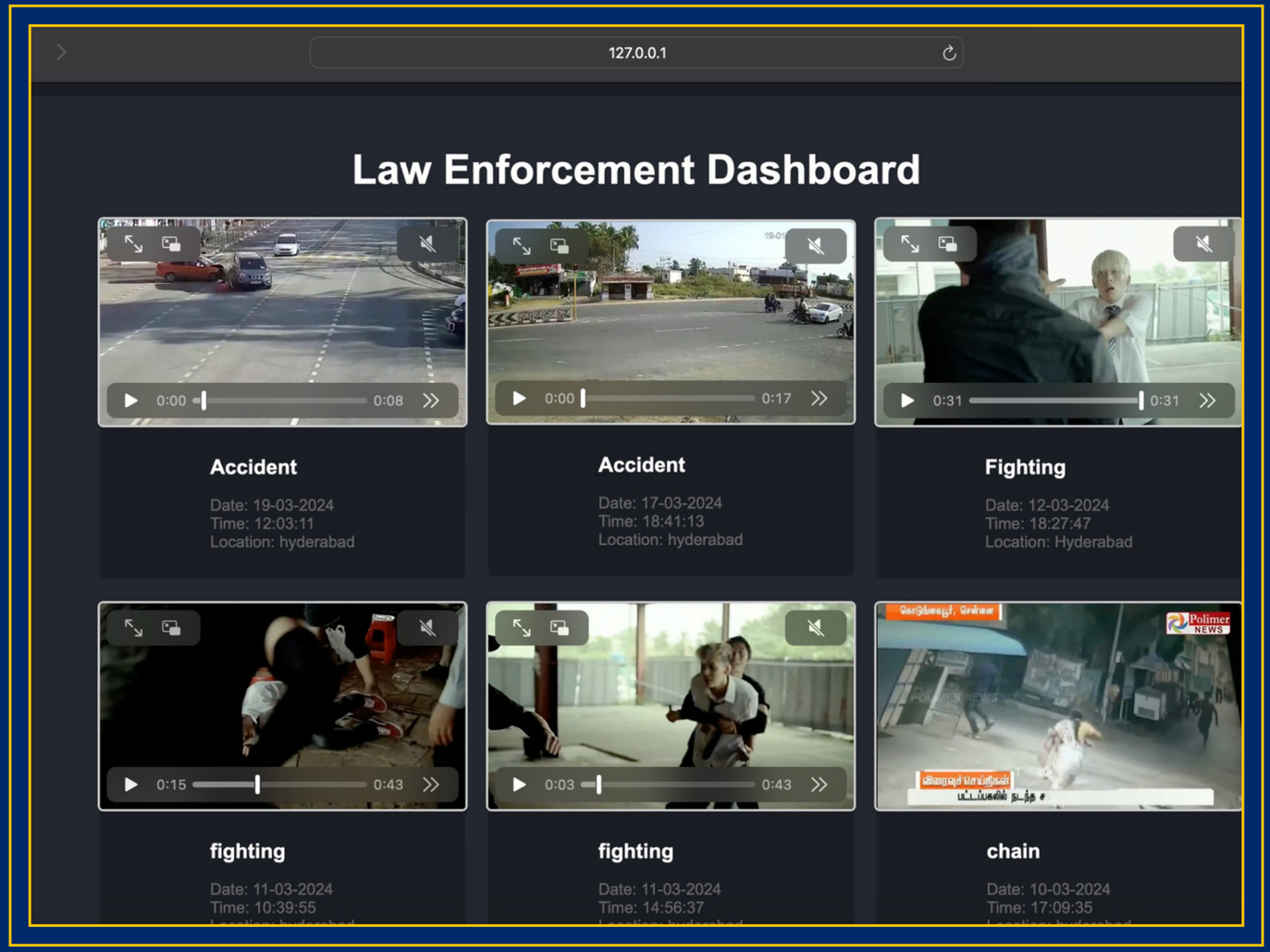
RESULTS:AUTHORITY DASHBOARD



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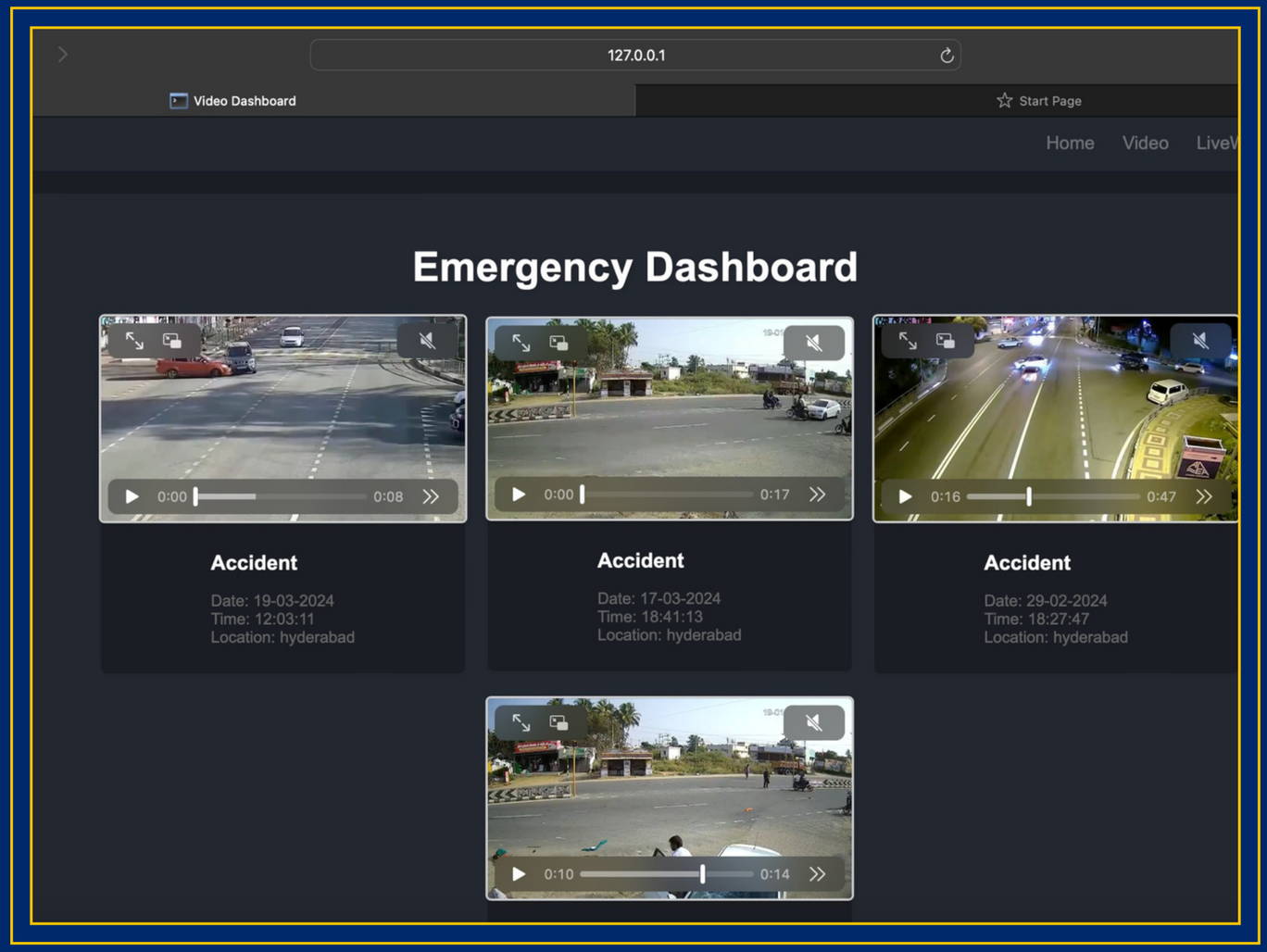
RESULTS:EMERGENCY DASHBOARD



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RESULTS:KIDNAPPING AND CHAIN SNATCHING DETECTION

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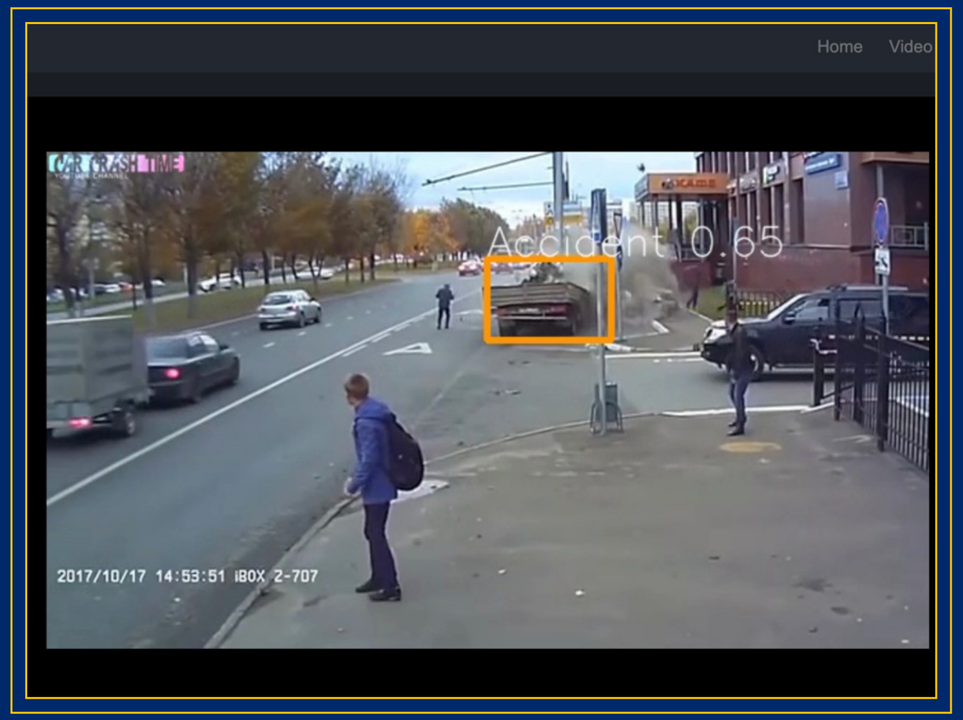
RESULTS:ACCIDENT AND FIGHTING DETECTION



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FUTURE SCOPE

- Identifying the Rule Violators
- Traffic voilations and traffic
- Tracking the chain snatchers
- Identifying Emergency Situations like Fire Accidents, and etc.

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CONCLUSION

- In this study, various techniques were used to quickly, accurately, robustly, and automatically identify anomalous events in the context of small-time crimes.
- Through the detection of small violations like antagonism as well as abnormal passenger behavior like damage and accidents, the proposed method can enhance passenger security.
- The solution performs exceptionally well in a range of use cases and environmental conditions. Their basis consists of deep learning algorithms that support different camera kinds, placements, and viewpoints. The embedded configuration in which the system operates consumes minimal power.

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THANK YOU