TITLE: Traffic Rules Violation Detection and Monitoring System in Campus

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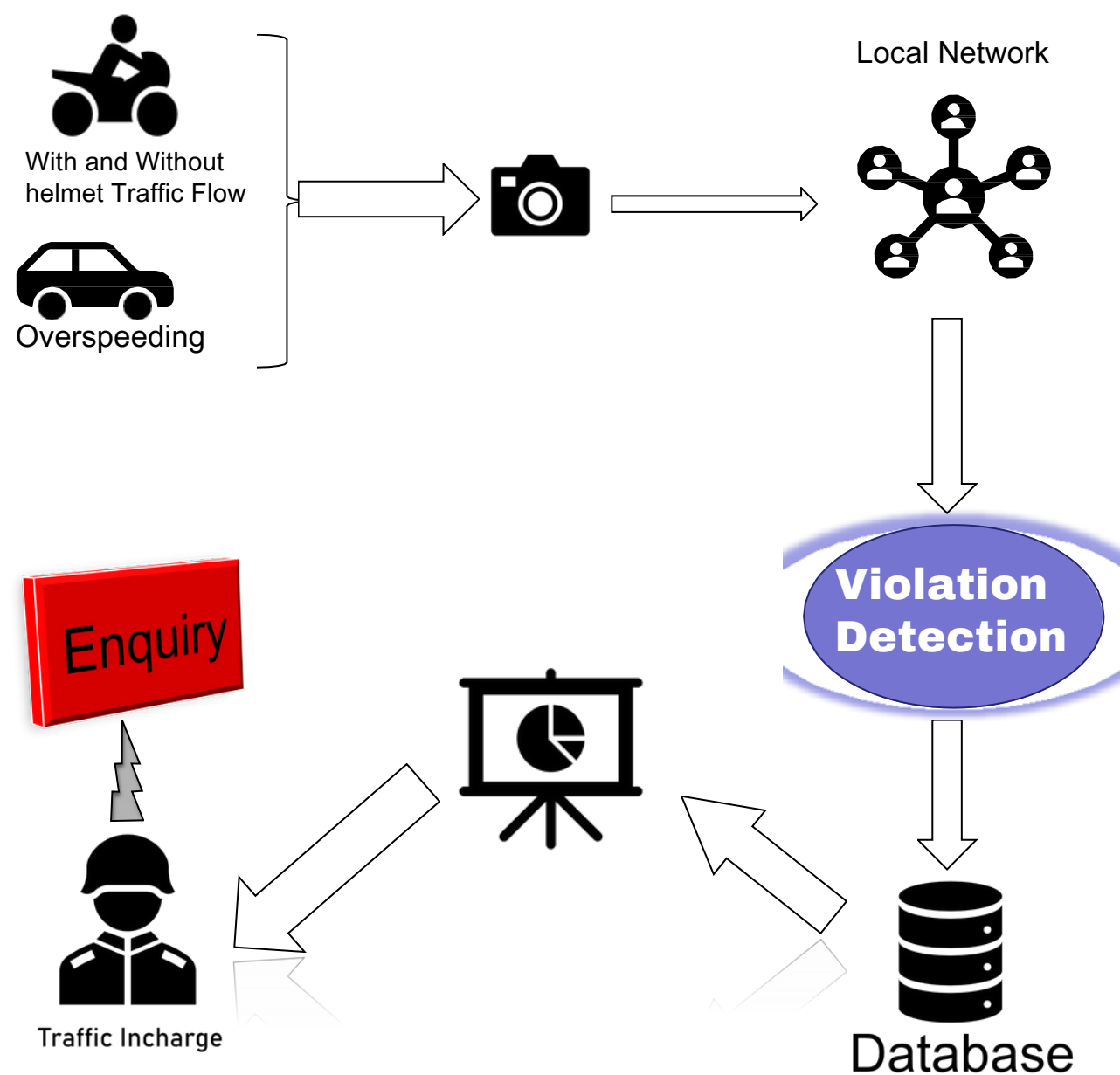
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Abstract

The number of vehicles has increased drastically in the last few decades making it difficult to monitor each and every vehicle for traffic management and law enforcement purposes. We proposed a computer vision based solution using deep learning that automatically detects traffic violators.The main objective is to detect vehicles that do not follow the rules of traffic,such as overspeeding, overloading, not wearing helmet and running on the wrong side of the road. We use Yolov3 for object detection and DeepSort for tracking the vehicles and pedestrians. The system detects the type of violation along with the vehicle information, maintains a log of violations, provides a detailed dashboard and provides alerts to the traffic police personnel. The logs can also be used for forensic purposes.
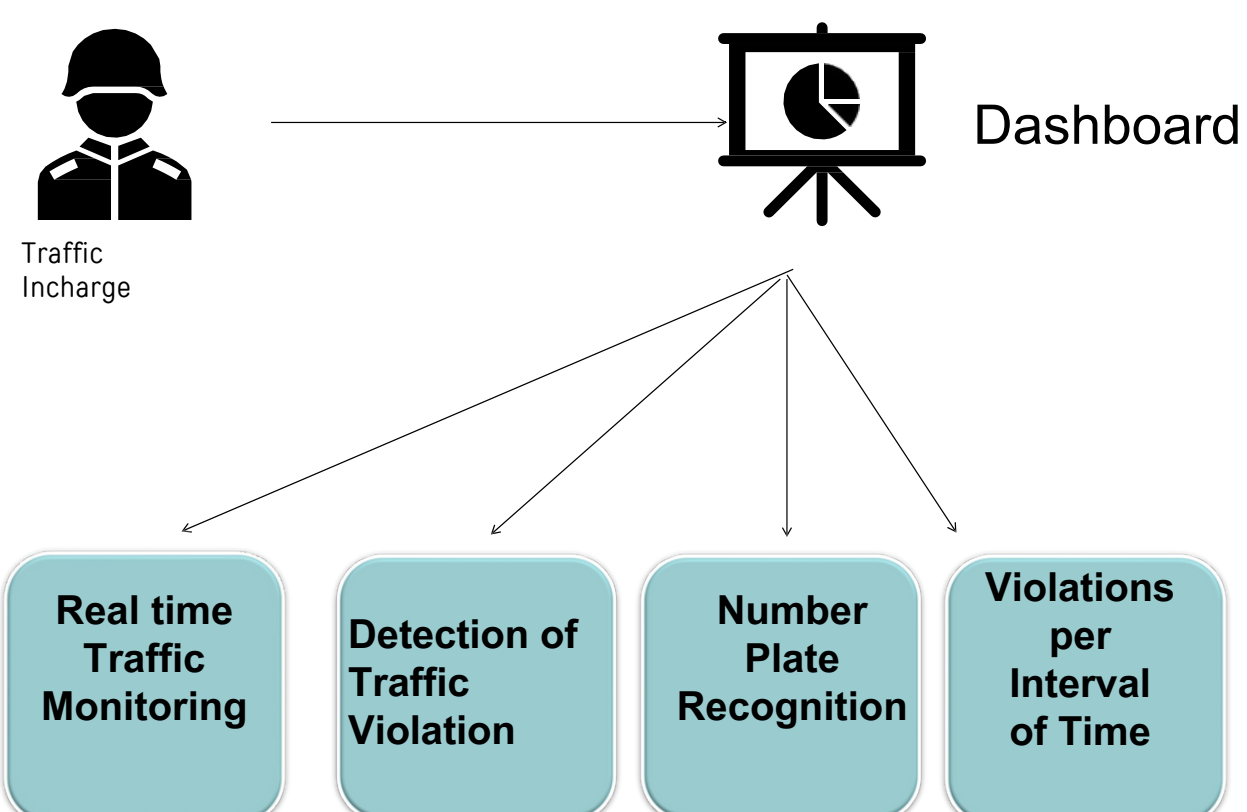
Innovation Impact

Impact

- Automated monitoring of traffic
- in real time
- Helmet detection
- Overloading detection
- Wrong-way detection

- Traffic monitoring without human intervention
- Less Traffic Violations
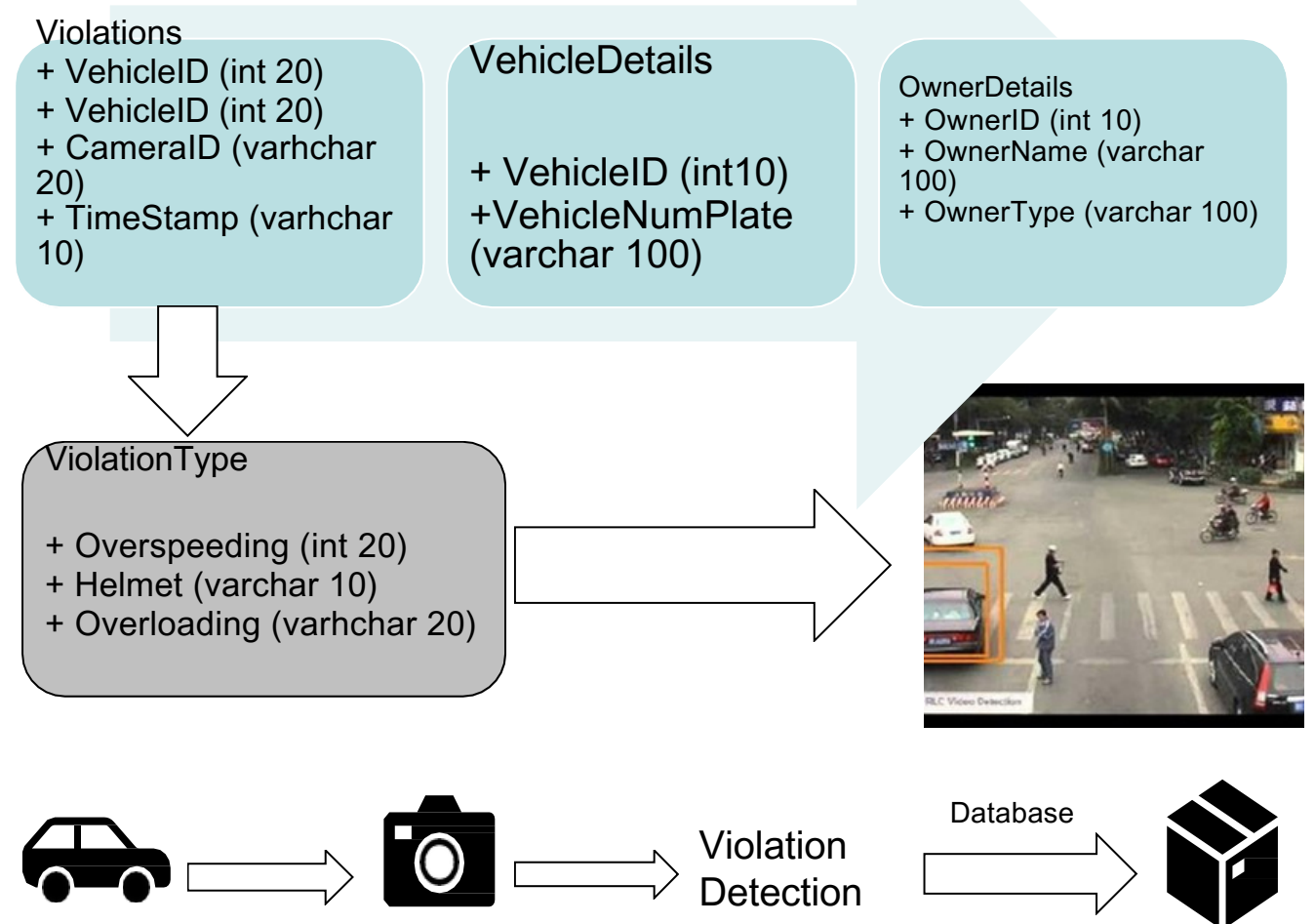- Reduced road accidents
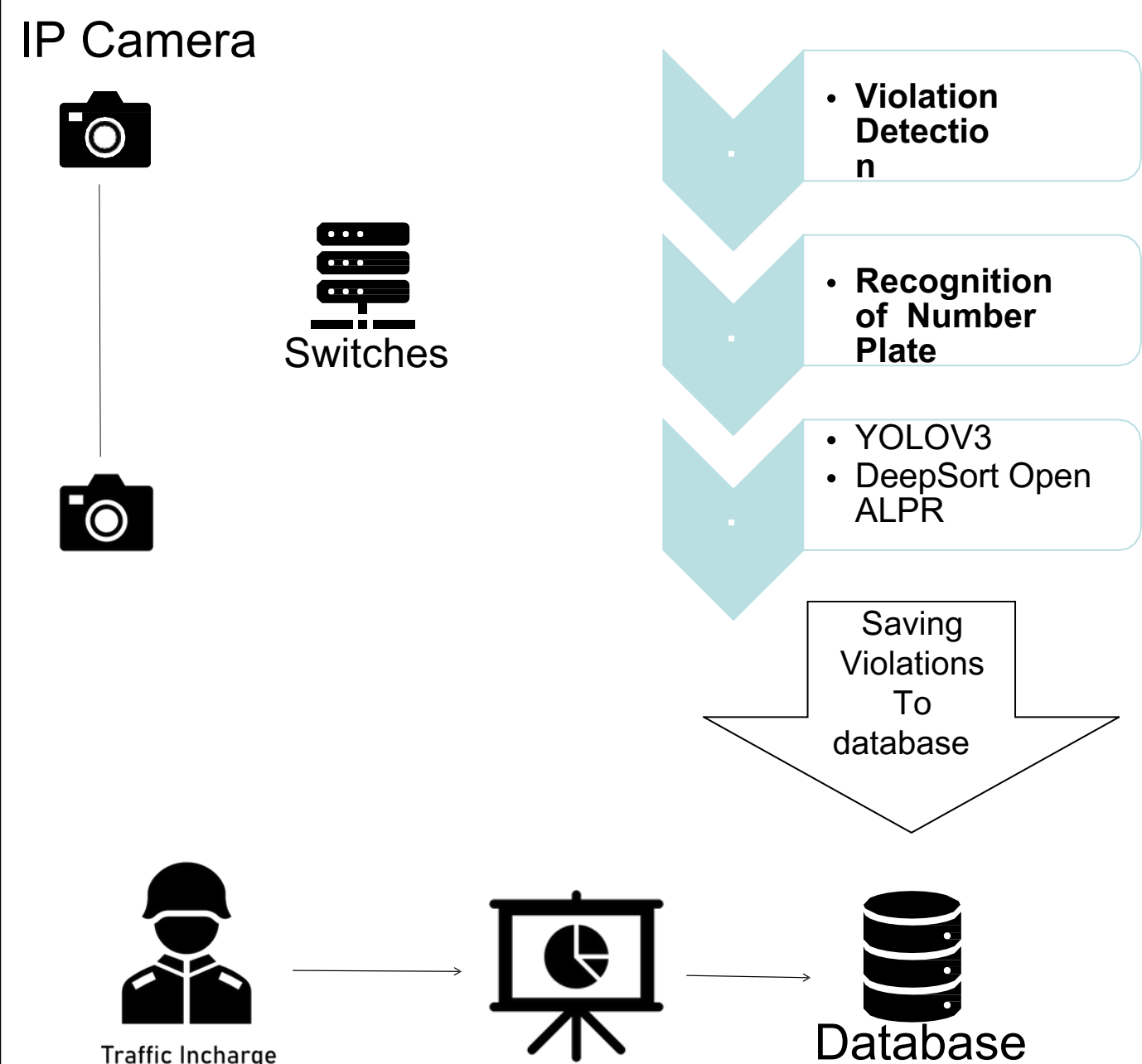- Support for forensics

Use Cases | Functional Workflow

With and Without helmet Traffic Flow

Overspeeding

Local Network

Enquiry

Violation Detection

Traffic Incharge

Database

Screen Flow | Interaction Model

Traffic Incharge

Dashboard

Real time Traffic Monitoring	Detection of Traffic Violation	Number Plate Recognition	Violations per Interval of Time

Entity Relationship Diagram / Data Processing workflow

Violations
+ VehicleID (int 20)
+ VehicleID (int 20)
+ CameraID (varhchar 20)
+ TimeStamp (varhchar 10)

VehicleDetails
+ VehicleID (int10)
+VehicleNumPlate (varchar 100)

OwnerDetails
+ OwnerID (int 10)
+ OwnerName (varchar 100)
+ OwnerType (varchar 100)

ViolationType
+ Overspeeding (int 20)
+ Helmet (varchar 10)
+ Overloading (varhchar 20)

Violation Detection

Database

Architecture Diagram

IP Camera

Switches

- **Violation Detection**
- **Recognition of Number Plate**
- YOLOV3
- DeepSort Open ALPR

Saving Violations To database

Traffic Incharge

Database

Language(s) | API(s) | Technology Stack

Languages/API - Python3, OpenALPR API Models Used – YOLOv3, Tensorflow, Dlib Hardware used – Uniview Cameras, switches.

Frontend **Bootstrap**	Middleware **Tracking & Detection Algorithms**	Backend **MYSQL**

DEPARTMENT: MCA