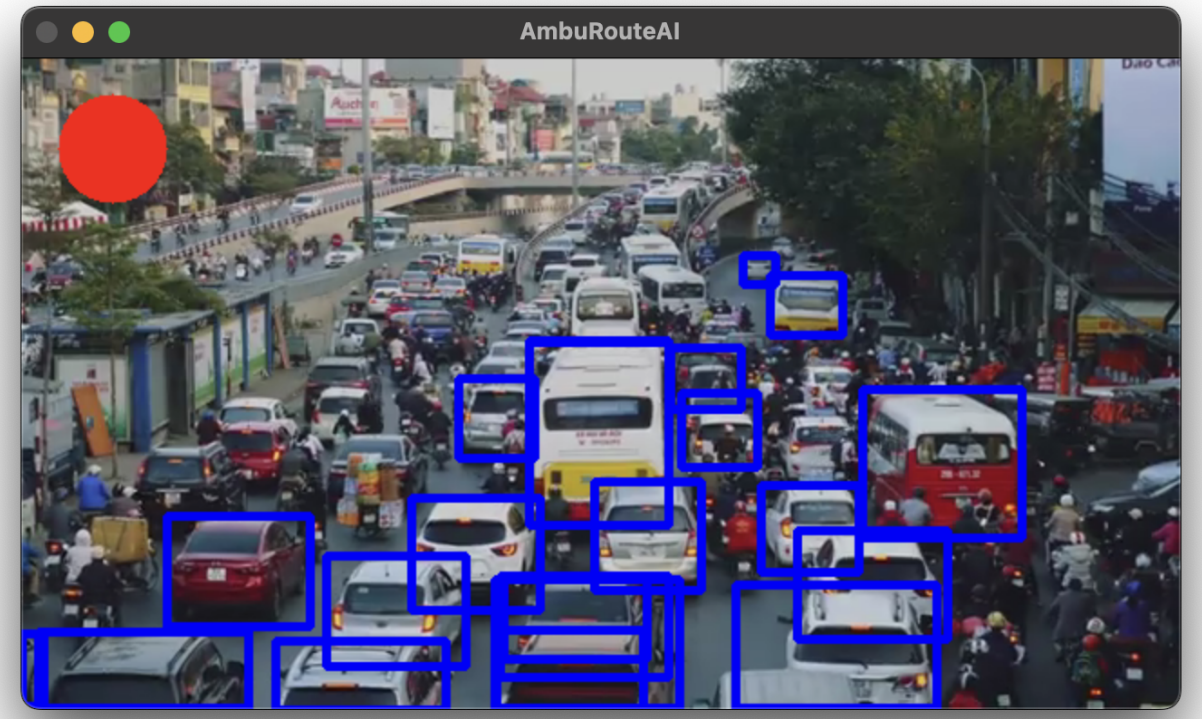
AmbuRouteAI



🚑 An AI-Powered Traffic Management for Emergency Vehicles.

🚦 AmbuRouteAI is an AI-powered traffic management system that detects ambulances in real-time and dynamically controls traffic signals to provide a clear path for emergency vehicles. Using YOLOv8 for object detection and OpenCV for traffic light simulation, this system helps reduce ambulance response time and enhances emergency healthcare logistics.

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🔧 Features

✅ **Real-time Ambulance Detection** – Uses YOLOv8 AI to identify ambulances from live traffic feeds.

✅ **Smart Traffic Signal Control** – Dynamically changes traffic lights using OpenCV when an ambulance is detected.

✅ **Live Video Processing** – Works with webcams or traffic camera feeds to analyze road conditions.

✅ **Seamless Integration** – Can be extended to IoT-enabled smart city infrastructure.

✅ **Scalable & Efficient** – Future-ready for integration with Google Maps API for real-time route optimization. ———

🛠️ Tech Stack

Component	Technology/Tool
AI Model	YOLOv8 (Ultralytics)
Computer Vision	OpenCV, NumPy
Backend	Python
Traffic Simulation	OpenCV
Live Video Input	Webcam / CCTV Feed

📜 How It Works

1️⃣ **AI-Powered Detection** – YOLOv8 identifies ambulances in real-time from traffic video feeds.

2️⃣ **Traffic Light Control** – If an ambulance is detected, the traffic light turns green; otherwise, it remains red.

3️⃣ **Visual Alerts & UI** – The system draws bounding boxes around detected ambulances and simulates traffic signals.

4️⃣ **Extensibility** – The project can integrate with Google Maps API & IoT sensors for smarter city-wide traffic control.

📥 Installation & Setup

Run

Download yolov8n.pt

```
git clone https://github.com/mantreshkhurana/AmbuRouteAI.git
cd AmbuRouteAI
python -m venv venv
source venv/bin/activate
pip install -r requirements.txt
python main.py -p traffic_video.mp4  # Use an MP4 file
python main.py -l  # For live webcam feed
```

🎯 Future Enhancements

- [ ] **Integrate with Google Maps API** – Real-time traffic data for route optimization.
- [ ] **IoT-Based Smart Traffic Signals** – Connect with Raspberry Pi & Arduino for real-world applications.
- [ ] **Hospital Alert System** – Send emergency notifications to hospitals about incoming patients.

- [ ] **Mobile App Interface** – Develop an ambulance tracking app with live traffic updates.

👨‍💻 Authors

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