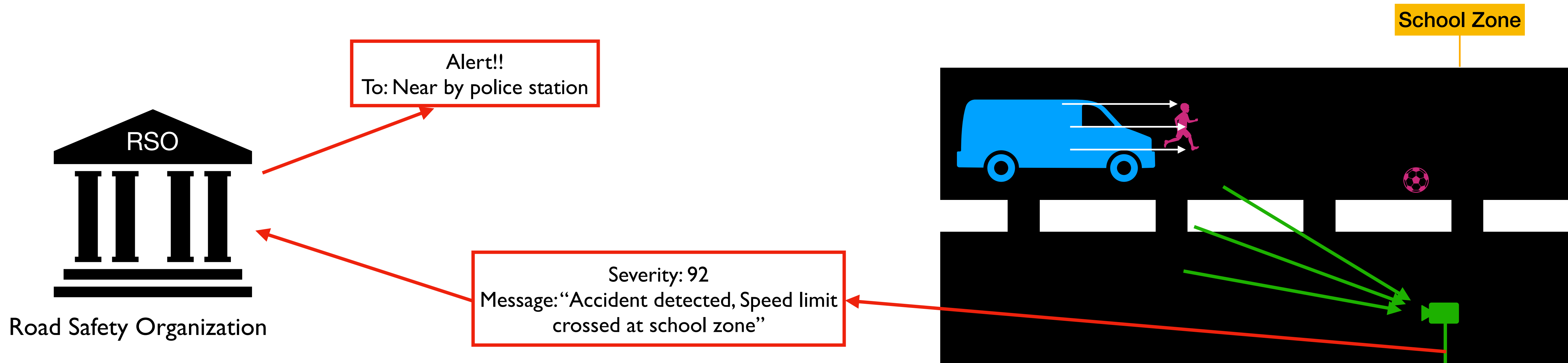


safetyFirst

AI-Powered Road Safety Leveraging Camera Feeds for a Safer Tomorrow

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Motivation

Road deaths are entirely preventable, but the reality is a good section of people do not adhere to the traffic rules and there by putting their lives in risk and as well as others unfortunately. For example, though people know that it is not safe to be on phone while driving but still they still do it.

Some adverse effects of road accidents include the following:

- 1) **Human suffering:** In many road accidents, both the victim and the accused often experience life-altering consequences. These incidents may result in death or severe, lifelong suffering, profoundly impacting not only their own lives but also the well-being of their families.
- 2) **Country/State development & reputation:** Road infrastructure and safety are among the top priorities for a country like India to address in its journey toward becoming a developed nation. Stricter enforcement of traffic rules, effective warnings, penalties, continuous monitoring, and, most importantly, robust accident recovery measures can significantly contribute to creating a safer and more responsible society for all citizens, including taxpayers.

Approach to address the problem

Timely automated alerts, continuous monitoring, proactive warnings to drivers about reckless driving or traffic violations, and an efficient accident recovery system can significantly reduce the incidence of road accidents and save lives.

Plan

By leveraging technologies such as computer vision and machine learning, camera feeds can be utilized to their fullest potential to address the following:

1. **Vehicle Condition Monitoring:** Detect vehicles in poor condition that may cause issues, and send automated alerts to the owner.
2. **Overload Detection:** Identify vehicles carrying excessive loads that pose risks to other drivers, and notify local authorities or check posts.
3. **Road Congestion Issues:** Detect obstructions such as unauthorized flex boards, improper parking, and roadside vendors causing traffic congestion.
4. **Speed Monitoring:** Track and detect vehicles exceeding speed limits.
5. **Alcohol Consumption Detection:** Identify individuals consuming alcohol while traveling.
6. **Accident Reporting:** Provide timely notifications to relevant departments or organizations about accidents, including their location and severity.
7. **Road Condition Analysis:** Implement mechanisms to assess road conditions, including identifying poorly maintained roads or areas where overly grown trees may obstruct traffic.
8. **Traffic Flow Optimization:** Evaluate the impact of roundabouts and other road structures on traffic flow.
9. **Seatbelt Compliance:** Detect whether drivers and passengers are wearing seatbelts.

10. **Data-Driven Statistics**

- Generate insights from previously collected data using machine learning, including:
 - Road fatalities categorized by age.
 - Driver age and accident correlation.
 - Accident-prone locations and times.

This system aims to improve road safety, reduce traffic congestion, and provide actionable insights to stakeholders.

Requirements

The system requires high-quality data encompassing comprehensive accident details such as location, victims, accused parties, causes, and other relevant factors to build an effective model. Additionally, real-time video feeds from cameras are essential for accurate and timely analysis.

~Most people fail to grasp the importance of traffic rules until tragedy strikes them or their loved ones.