

## Problem Statement

Distracted driving is a critical issue that significantly jeopardizes road safety, contributing to numerous accidents and fatalities globally. Despite widespread awareness campaigns and stricter regulations, distracted driving behaviors such as texting, eating, or interacting with electronic devices persist as a significant concern. Traditional enforcement methods are often ineffective due to their reactive nature and resource constraints.

To address this pressing challenge, we propose a novel computer vision-based solution for detecting distracted driving behaviors in real-time. By analyzing visual cues from in-vehicle cameras, this system aims to identify and classify various forms of driver distraction proactively, facilitating timely interventions and reducing the risk of accidents.

## Approach

Our solution involves the development of a robust and efficient behavior detection system based on a **Hybrid CNN Framework**. This framework integrates the strengths of multiple pre-trained convolutional neural network architectures, including Xception, EfficientNetB0, and VGG16. Through transfer learning and advanced feature extraction, the model captures diverse visual patterns associated with distracted driving behaviors.

The system is trained on a rich and diverse dataset of in-vehicle camera images, ensuring its ability to accurately detect and classify distractions across varied driving conditions and scenarios.

By employing this proactive approach, our solution offers a powerful tool for promoting road safety. It is designed to support law enforcement agencies, transportation authorities, and vehicle manufacturers in their efforts to mitigate accidents caused by driver distraction, thereby fostering safer driving environments.

Let me know if further refinements are needed!