NeoNexus 36.0 Hackathon Abstract :

Team Details:

- **Team Name:** Strivers
- **Team Leader:** Y PRATHAP REDDY
- **Team Members (Name + USN):** Y Prathap Reddy (3BR22CA061)
  Praveen Kumar Naik (3BR22CS124)
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Problem Statement:

AI Dashcam Analytics for Risk Detection

Real-time video processing alerts drivers about dangerous maneuvers or road behavior, while also helping in insurance cases.

Problem Overview :

*India ranks among the highest globally in road accident fatalities, with risky driving behaviors being a key contributor. Dashcams are increasingly common, yet most only record footage without providing intelligent insights. There is a critical need for an AI-driven system that can **detect and alert in real-time** about dangerous driving patterns like rash lane changes, sudden braking, tailgating, and pedestrian hazards. This can not only prevent accidents but also support post-incident analysis and insurance claims.*

Proposed Solution :

We propose an **AI-powered dashcam system** that processes live or recorded video and:

- **Detects risky behaviours** like sharp lane cuts, tailgating, speeding, and pedestrian proximity using object detection and tracking.
- **Flags road hazards** such as potholes, stopped vehicles, or jaywalking.

- **Generates real-time alerts** to drivers via a mobile app.
- **Logs all events to a cloud dashboard** for future review, insights, and insurance usage.

The user can install the app in any smartphone mounted as a dashcam. The app captures video analyzes it locally or via the cloud, and shows alerts or stores incidents in a backend system.

Innovation & Uniqueness :

- Real-**time feedback**, not just passive recording like traditional dashcams.
- Edge **deployment possible** (Jetson Nano or smartphone) — ideal for low-latency processing.
- Uses **AI tracking + behavioral heuristics**, not just basic object detection.
- Scalable **dashboard** enables fleet monitoring for logistics or insurance use.
- Future-ready: can integrate **driver emotion detection**, **vocal warnings**, and **insurance APIs** for driving score analysis.

Tech Stack / Tools:

List major technologies, languages, frameworks, APIs, or hardware we'll use.

- **Frontend:** React.js, Tailwind CSS
- **Backend:** Python + Fast API
- **ML/AI:** YOLOv8, DeepSort, OpenCV, PyTorch
- **Database:** MongoDB / Firebase
- **Deployment:** Docker, Render / AWS
- **Optional Mobile App:** React Native or Flutter

Expected Outcome :

*By the end of the hackathon, we aim to build a **working MVP** that:*

- *Accepts dashcam video (live or file-based)*
- *Runs object detection + tracking*
- *Flags at least 3 types of risky behavior*
- *Generates event logs with video snippets*
- *Displays results on a dashboard*