**[SAFE DIVE HACK 2025 DETAILS ]**

1.Team Name: FAST CREW

2.Module Chosen: Drowsiness alert

3. Team Members

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4. Approach to Solution:

Introduction:

Drowsiness while driving is one of the major causes of road accidents, leading to loss of life and property. To address this challenge, our project aims to develop an AI-powered Advanced Driver Assistance System (ADAS) focused on detecting driver fatigue and providing timely alerts for vehicles. camera-based detection but often augment it with additional onboard sleep-detection sensors (e.g, steering behaviour analysis)., the system will monitor facial landmarks such as eye closure and yawning patterns to identify signs of drowsiness. With relying on physical hardware, the solution will be developed and produced further.

Technologies:

Programming Language: Python

Libraries & Frameworks: OpenCV, MediaPipe/Dlib, TensorFlow/Keras or PyTorch

Dataset: NTHU-DDD (Driver Drowsiness Detection Dataset) or similar

Audio/Visual Alert Simulation: Pygame or other Python-based alert libraries

Methods:

Face and eye detection using computer vision techniques.

Feature extraction (e.g., Eye Aspect Ratio - EAR, mouth opening detection).

**Thresholding**: If EAR stays below a threshold (e.g., 0.25) for a few frames, trigger alert.

**Alert Mechanism**: Use sound (via playsound or pygame) or visual warning.

Simulation of alerts (audio/visual) upon detecting drowsiness.

Testing and validation using public datasets, without hardware integration.

**5. Hardware Requirement:** No, not needed for hackathon.

6. GitHub Repository Link: