



# CHAROTAR UNIVERSITY OF SCIENCE & TECHNOLOGY

DEVANG PATEL INSTITUTE OF ADVANCE TECHNOLOGY  
AND RESEARCH



## WEEKLY REPORT - 2

<b>Project ID: 19</b>	<b>Semester: 6</b>
<b>From Date: 22/12/25</b>	<b>To Date: 26/12/25</b>
<b>Student ID: 23DCE091, 23DCE092, 23DCE093</b>	

### Work done in last week (Attach supporting Documents):

This week, we focused on the manual implementation of drowsiness detection.

The following tasks were successfully completed:

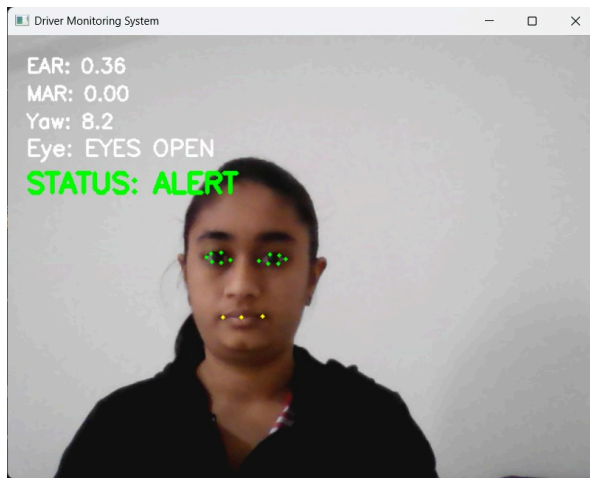
1. Camera and Face Detection Setup
  - Integrated webcam using OpenCV
  - Implemented face landmark detection using MediaPipe Face Mesh
2. Eye Aspect Ratio (EAR) Implementation
  - Extracted eye landmarks from the face
  - Calculated Eye Aspect Ratio (EAR)
  - Fixed threshold values to distinguish between:
    - Eyes open
    - Eyes closed
    - Drowsy state
3. Drowsiness Logic
  - If EAR remains below a fixed threshold for a certain time, the driver is marked as DROWSY
  - Otherwise, the driver is marked as ALERT
4. Real-Time Testing
  - Tested the system under different eye conditions:
    - Normal open eyes
    - Closed eyes
    - Prolonged eye closure
5. Result Visualization
  - Displayed real-time values on screen:
    - EAR value
    - Eye state

- Final driver status

## Results

The system was able to:

- Correctly detect eyes open → ALERT state
- Correctly detect eyes closed for longer time → DROWSY state
- Show stable EAR values in real-time
- Run smoothly on a live webcam feed



*Fig 1: ALERT state*



*Fig 2 : DROWSY state*

## Plans for next week:

In the next week, the following tasks will be performed:

- Implement Mouth Aspect Ratio (MAR) for yawning detection
- Integrate yawning detection with the existing system
- Test combined conditions:
  - Drowsiness + yawning
  - Normal + yawning
- Begin preparation for machine learning-based eye state classification

## References:

1. <https://www.kaggle.com/datasets/serenaraju/yawn-eye-dataset-new>
2. Kumar, S. and Tomar, C.S., 2025, March. Driver Drowsiness Detection and Alert System Using Computer Vision. In *2025 3rd International Conference on Disruptive Technologies (ICDT)* (pp. 548-553). IEEE.
3. Karthigavani, N., Christofer, S., Dhanesh, S. and Dhanush, P.S.R., 2025, July. A hybrid accident prevention framework towards Driver Fatigue and Distraction Detection using YoloV10 architecture. In *2025 2nd International Conference on New Frontiers in Communication, Automation, Management and Security (ICCAMS)* (pp. 1-6). IEEE.

4. Karthigavani, N., Christofer, S., Dhanesh, S. and Dhanush, P.S.R., 2025, July. A hybrid accident prevention framework towards Driver Fatigue and Distraction Detection using YoloV10 architecture. In *2025 2nd International Conference on New Frontiers in Communication, Automation, Management and Security (ICCAMS)* (pp. 1-6). IEEE.
5. Kurian, A.T. and Soori, P.K., 2023, March. AI-Based Driver Drowsiness and Distraction Detection in Real-Time. In *2023 International Conference on Computational Intelligence and Knowledge Economy (ICCIKE)* (pp. 13-18). IEEE.
6. Nasser, M., Rashid, T., Ghanem, A., Saeedi, H. and Mahasneh, H., 2025, January. Design and Implementation of a Driver Drowsiness Detection System to Prevent Accidents Using Machine Vision. In *2025 IEEE International Conference on Consumer Electronics (ICCE)* (pp. 1-3). IEEE.

**Signature of Student**

**Signature of Mentor**