



# Vision-Wave

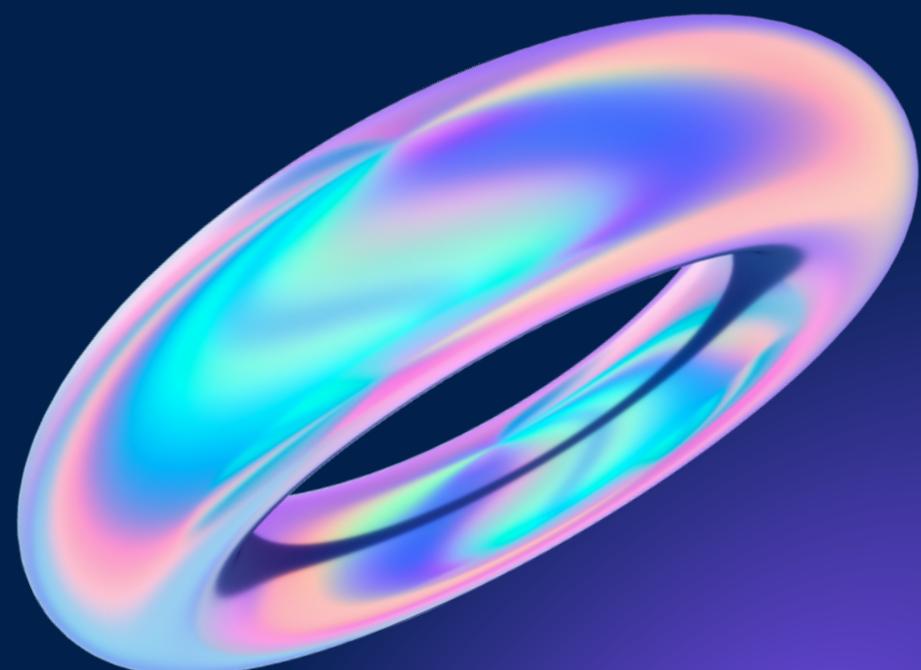
**Theme-** Computer Vision

**Problem Statement-** A Machine Learning/Deep Learning algorithm capable of analyzing video feeds from an in-car camera and accurately detecting instances of driver drowsiness, unease, or sleepiness.

**Team Name-** Binary Bharat

**Team Leader-** Nandani Goswami

**Institute Name-** KIET Group of Institutions



# Idea Overview

- World Health Organization (WHO), road traffic accidents are a significant global health concern, with **millions of lives lost** annually.
- Among the leading causes of these accidents is driver fatigue, including drowsiness and unease, which severely impairs the driver's ability to react quickly and make sound decisions
- A **computer vision** based model to detect the drowsiness of the driver while driving.
- Driver is required to put the camera on the front desk-board when he/she starts the drive.
- Our model will continuously monitor the eye-action of the driver.
- As soon as a slight drowsiness or fatigue is detected, a loud alarm will automatically ring.
- This alarm will result in driver regaining cautiousness.

# Technology Used

- Sleep Detection CNN Model
  - Code for a Convolutional Neural Network (CNN) classification model designed to predict whether a person is sleeping or not based on the detection of closed eyes. The model also takes into account yawning as an additional feature for sleep detection.
- Dataset
  - The model has been trained on a dataset consisting of images with labels indicating whether the person in the image is sleeping or not. The dataset includes variations in lighting conditions, head poses, and facial expressions.
- Model Architecture
  - The CNN model architecture is as follows: `model = Sequential()`
  - Django Channels
  - HTML
  - CSS
  - Rest Frameworks



# Market Prospects

- This system will reduce accidents at a significant level.
- This technology can directly be **sold to car companies.**
- This will increase the **value of the car.**
- The **effectiveness of the system.**
- **Ease** of the person using the system
- The technology has potential to **unlock an entirely new segment** in car safety.
- Estimated market value is **US \$13.5 Billion** with a growth rate of **11.4%**



# Future Scopes

**Healthcare:** In hospitals, the model can monitor the **fatigue levels of medical staff** to prevent errors and ensure patient safety. It can also be used to monitor patients in critical care to ensure they remain alert and responsive.

**Aviation Safety:** In aviation, this technology can be used to monitor the alertness of pilots and cabin crew, ensuring the safety of passengers and the crew itself.

**Security:** In security monitoring, it can be used to detect drowsy security personnel, improving the effectiveness of surveillance and ensuring the safety of premises.

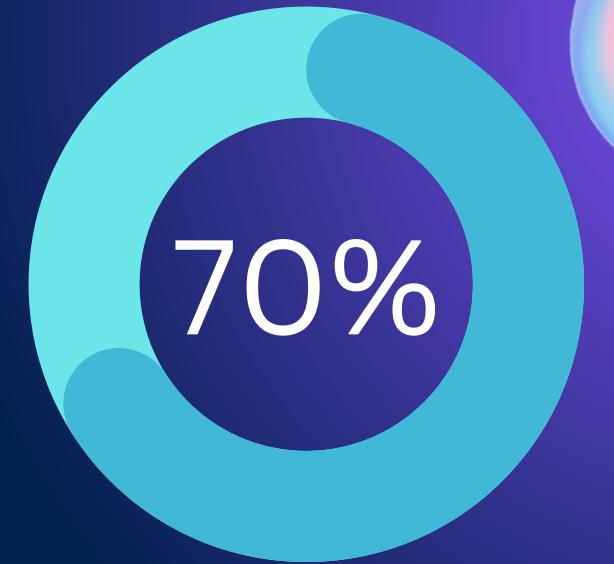
# Without Vision-wave



Starts Driving



Feels dizzy



Life threats



# With Vision-wave



Starts Driving



Feels dizzy



Alarm Rings



Up to 60%  
lives saved.

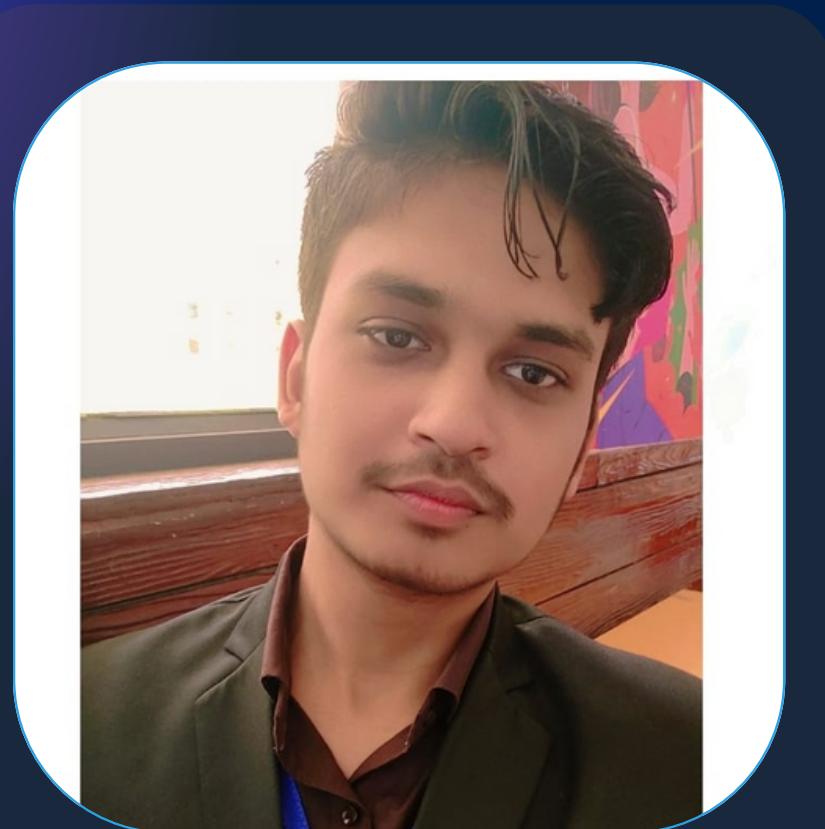


# Team



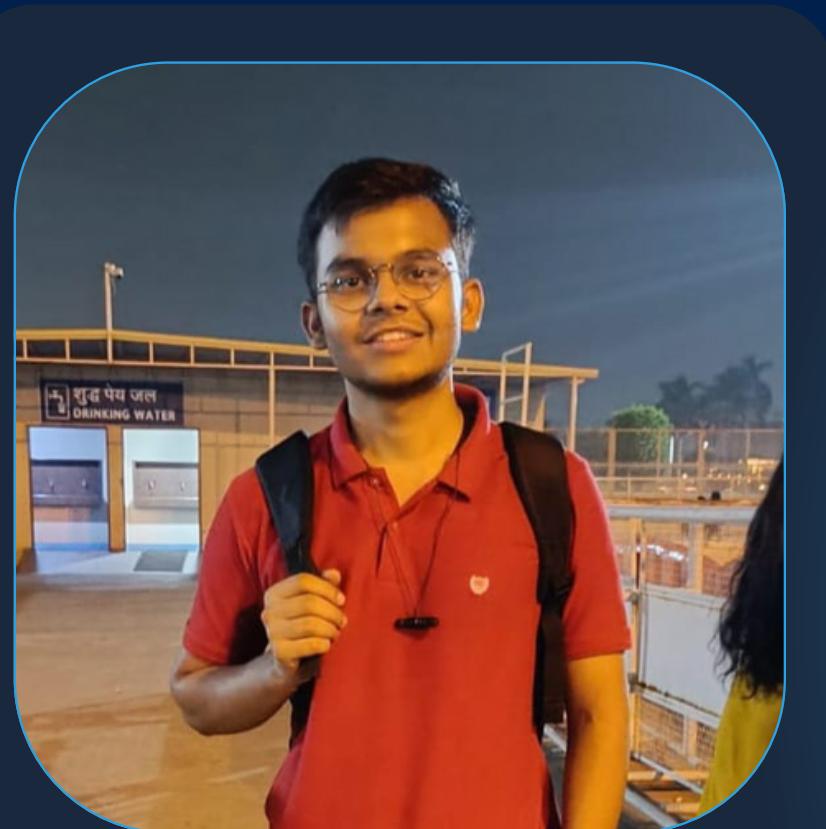
**Team Leader**

Nandani Goswami  
B.Tech-CSIT



**Team Member**

Ayush Agarwal  
B.Tech-CSE



**Team Member**

Pranshu Gupta  
B.Tech-CSIT



**Team Member**

Shivam Yadav  
B.Tech-IT