Title of the invention: Driver Drowsiness Detection System Using Machine Learning

Abstract

Driver drowsiness is a significant factor contributing to road accidents worldwide. Early detection of drowsi

PROPOSED METHODOLOGY

Data Acquisition:

Visual Data: Utilize a camera to capture video of the driver's face in real time. The video frames are prepro

Feature Extraction:

Facial Features: Use computer vision techniques such as Haar cascades or Dlib’s facial landmark detecto

Preprocessing:

Normalize and filter the data to reduce noise and ensure consistency across diverse lighting conditions an

Implement techniques such as histogram equalization for video frames.

System Integration:

Deploy the trained model on an embedded system or edge device to facilitate real-time drowsiness detecti

Integrate with an alert mechanism, such as audio alarms or seat vibrations, to immediately notify the driver

Performance Evaluation:

Validate the system’s accuracy using metrics such as precision, recall, and F1-score.

Conduct real-world testing under varying environmental conditions to ensure reliability.

Improvement and Scalability:

Introduce adaptive learning mechanisms to personalize the system for individual drivers based on their uni

Explore cloud-based solutions for processing and improving scalability, enabling fleet-wide deployment.

This methodology emphasizes the use of computer vision techniques focusing solely on face detection, alo

Flowchart:

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