Title of the Project : Smart Anti-sleep Alert system for Driver using eye blink detection

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ABSTRACT

The *Smart Anti-Sleep Alert System Using Eye Blink Detection* is developed to reduce road accidents caused by driver drowsiness. Driving for long hours often leads to tiredness and loss of alertness, which can be dangerous. This system aims to monitor the driver’s eye movements in real time using a camera. By detecting the frequency and duration of eye blinks, the system can identify if the driver is feeling sleepy. If the driver’s eyes remain closed beyond a specific time limit, an alarm is triggered immediately. The alert helps the driver regain attention and avoid possible accidents.

The system uses OpenCV for image processing and the Haar Cascade Classifier algorithm for eye detection. It captures continuous video frames, analyzes them, and classifies whether the eyes are open or closed. This process happens instantly without delay, ensuring accurate results. The hardware setup includes a camera, microcontroller, and buzzer components, which can be easily installed in any vehicle for continuous monitoring. The software part is developed using Python due to its strong support for computer vision libraries. The project is low-cost, efficient, and easy to use in real-world conditions. It plays a vital role in preventing road mishaps caused by driver fatigue and enhances road safety by maintaining driver awareness.

The project also provides scope for future upgrades such as cloud alerts or GPS integration for emergency responses. By implementing this system, accidents due to human negligence can be significantly reduced while encouraging responsible driving and promoting the use of AI for safety applications. This innovation bridges the gap between technology and human safety, offering a reliable safety measure suitable for both personal and commercial vehicles.

In conclusion, the project demonstrates how computer vision can make transportation safer, efficient, and intelligent. Overall, this system contributes to a smarter and safer driving environment by ensuring protection, awareness, and safety for drivers and passengers alike.