A Theme-Based Project Report

on

DRIVER DROWSINESS DETECTION

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**BONAFIDE CERTIFICATE**

This is to certify that the Theme Based Project titled **“Driver Drowsiness Detection”** being submitted by Spoorthi Vadlakonda and Vamsi Krishna Desineedi, bearing 1602-21-748-052 and 1602-21- 748-059 respectively, in partial fulfilment of the requirements of the

VI semester, Bachelor of Engineering in Computer Science & Engineeringis a record of bonafide work carried out by him under my guidance.

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# Abstract

Driver drowsiness is a significant factor contributing to road accidents worldwide, posing a serious threat to road safety. In response to this issue, this project presents the development and implementation of a comprehensive driver drowsiness detection system. The system integrates both hardware and software components to effectively monitor driver alertness in real-time.

The hardware-based system utilizes an eye blink sensor, Arduino Nano microcontroller, and buzzer to detect drowsiness based on the driver's eye blink patterns. When the system detects prolonged eye closure, indicative of drowsiness, it triggers an audible alert to notify the driver and prevent potential accidents.

In addition to the hardware solution, a machine learning-based approach is employed using a webcam and Python programming language. Through the use of computer vision techniques and machine learning algorithms, the software system analyzes facial expressions and eye movements to identify signs of drowsiness. Upon detection, the system issues an alert, providing a prompt reminder to the individual to take necessary precautions.

Experimental results demonstrate the effectiveness of both hardware and software components in accurately detecting driver drowsiness. Comparative analysis reveals the strengths and limitations of each approach, providing insights for future enhancements and research in the field of driver safety.

Overall, this project contributes to the advancement of driver drowsiness detection technology, offering a practical solution to mitigate the risks associated with drowsy driving and improve safety for all individuals on the road.