A Theme-Based Project Report

on
DRIVER DROWSINESS DETECTION

By

SPOORTHI VADLAKONDA

1602-21-748-052

VAMSI KRISHNA DESINEEDI

1602-21-748-059

Under Guidance of

Ms. T. Jalaja

Assistant Professor

Department of Computer Science & Engineering

Vasavi College of Engineering (Autonomous)

(Affiliated to Osmania University)

Ibrahimbagh, Hyderabad-31

2024

Vasavi College of Engineering (Autonomous)

(Affiliated to Osmania University)

Hyderabad-500 031

Department of Computer Science & Engineering

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.

Ms. T. Jalaja,   **Dr. T. Adilakshmi,**
Assistant Professor,   **Professor&HOD,**
Dept. of CSE.   **Dept. of CSE.**

Acknowledgement

We take this opportunity with pride and enormous gratitude, to express the deeply embedded feeling and gratefulness to our respectable guide **Ms. T. Jalaja,** Department of Computer Science and Engineering. Whose guidance was unforgettable and innovative ideas as well as her constructive suggestions has made the presentation of my thesis a grand success.

We are thankful to **Dr. T. Adilakshmi**, Head of Department (CSE), **Vasavi College of Engineering** for their help during our course work.

Finally at last but not least express our heart full thanks to the management of our college, **Vasavi College of Engineering** for providing the necessary arrangements and support to complete my seminar work successively.

We convey our heartful thanks to our external guide **Mr. Veerendra Thati** who has helped us throughout our project work.

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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.