



**INFORMATICS
INSTITUTE OF
TECHNOLOGY**

INFORMATICS INSTITUTE OF TECHNOLOGY

In collaboration with

UNIVERSITY OF WESTMINSTER

**Drowsiness Detection Based on Eye Characteristics of
Bespectacled Drivers Using Deep Learning**

A Dissertation by

Mr. Salitha Perera

W1761293 / 2019347

Supervised by

Ms. Sachinthani Perera

Submitted in partial fulfilment of the requirements for the BEng (Hons) in Software
Engineering degree at the University of Westminster.

May 2023

Abstract

Accidents on the road are frequently caused by drowsy drivers. A driver's reaction time slows down and their capacity to make wise decisions suffers when they are sleepy or drowsy. Additionally, drowsy driving can cause drivers to veer off course or even pass out behind the wheel, all of which increase the risk of serious accidents. Driver drowsiness can be caused by a variety of factors, including sleep disorders, long periods of continuous driving, and sleep deprivation. To ensure their safety and the safety of other road users, it is crucial for drivers to notice symptoms of drowsiness, such as yawning, frequent blinking, or drifting, and to take breaks as necessary.

The technology may detect fatigue by employing neural networks to recognize indicators like slow eye movement. The neural network may be trained to recognize certain characteristics specific to drivers who wear glasses by using 3D synthetic data to simulate different scenarios. Because of this, the system will be better able to identify drowsy driving in drivers who wear eyeglasses and alert them in time to avoid accidents. Overall, your proposal is a creative method for using technology to improve traffic safety and prevent accidents caused by drowsy driving.

The classification model gave 98% accuracy after being trained several times. Therefore, it is apparent that applying CNN-based algorithms for image classification is more suitable. For the eyeglass removal process 3D synthetic data approach gave better results. The proposed system gives high accuracy for the classification process. In this document, the author describes the flow of the proposed drowsiness detection.

Key Words: - Drowsiness Detection, Bespectacled Drivers, Eye Characteristic