VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama", Belagavi-590018, Karnataka

Report on

"Helmet Detection Using AI"

Submitted in partial fulfilment of the requirements for the award of the degree of Bachelor of Engineering in Computer Science & Engineering

Submitted By

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Certificate

This is to certify that the Mini Project (BCS586) work entitled **"Helmet Detection Using AI"** carried out by

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Bonafide students of V semester B.E. for the partial fulfilment of the requirements for the Bachelor's Degree in Computer Science & Engineering of the **VISVESVARAYA TECHNOLOGICAL UNIVERSITY** during the academic year 2024-25. The Mini Project report has been approved as it satisfies the academic requirements in respect of the Mini Project work prescribed for the said degree.

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Abstract

Road safety is a critical concern worldwide, with motorcyclists being particularly vulnerable to accidents and injuries. The use of helmets significantly reduces the risk of fatalities, yet many riders fail to comply with helmet-wearing regulations. This project aims to develop an AI-powered Helmet Detection system to promote safer roads by automatically identifying motorcyclists not wearing helmets. Using advanced computer vision techniques and deep learning, the system is designed to analyse live video feeds or images from traffic surveillance systems, ensuring monitoring and enforcement.

The core of the project involves training a deep learning model on a dataset containing images of motorcyclists with and without helmets. Techniques such as YOLO (You Only Look Once) or similar object detection algorithms are utilized for accurate identification and classification. The system is further enhanced to detect motorcycles, differentiate riders from pillion passengers, and assess compliance. Key achievements include achieving high accuracy in helmet detection, seamless integration with existing traffic monitoring infrastructure, and the potential to generate automated violation reports for authorities. Project contributes to the broader vision of leveraging AI to improve road safety, reduce accidents, and encourage responsible behaviour among road users.

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