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Technical Seminar Report 20MCA42

on “Advanced Driver Assistance System”

Submitted by
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**Under the Guidance
of**

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*Submitted in partial fulfillment of the requirements for the award of degree
of*

MASTER OF COMPUTER APPLICATIONS

2022-2023

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DEPARTMENT OF MASTER OF COMPUTER APPLICATIONS

Bengaluru– 560059



CERTIFICATE

Certified that the seminar titled “**Advanced Driver Assistance System**” carried out by **Nithin, 1RV21MC067**, a bonafide student of **RV College of Engineering®, Bengaluru** submitted in partial fulfilment for the award of **Master of Computer Applications** of **RV College of Engineering®, Bengaluru affiliated to Visvesvaraya Technological University, Belagavi** during the year **2022-23**. It is certified that all corrections/suggestions indicated for internal assessment have been incorporated in the report deposited in the departmental library. The report has been approved as it satisfies the academic requirement in respect of technical seminar prescribed for the said degree.

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DECLARATION

I, **Nithin**, student of fourth semester MCA in **Department of Master of Computer Applications**, RV College of Engineering®, Bengaluru declare that the seminar titled “**Advanced Driver Assistance System**” has been carried out by me. It has been submitted in partial fulfilment of the course requirements for the award of degree in **Master of Computer Applications** of RV College of Engineering®, Bengaluru affiliated to Visvesvaraya Technological University, Belagavi during the academic year **2022-23**. The matter embodied in this report has not been submitted to any other university or institution for the award of any other degree or diploma.

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ABSTRACT

Advanced Driver Assistance Systems (ADAS) have revolutionized the automotive industry by integrating cutting-edge technologies to enhance vehicle safety, improve driving experience, and pave the way for autonomous driving. ADAS utilizes a network of sensors, cameras, radars, and software algorithms to monitor the surrounding environment, analyse data in real-time, and assist the driver in various driving tasks. An overview of the main ADAS features and components is given in this abstract. We start by exploring the sensor technologies used by ADAS, including LiDAR (Light Detection and Ranging), radar, ultrasonic sensors, and cameras, which allow the system to receive detailed information about the surroundings of the vehicle. Features like adaptive cruise control, lane departure warning, blind-spot recognition, and pedestrian detection are made possible by these sensors.

The software algorithms that drive ADAS systems, such as those utilising computer vision, machine learning, and artificial intelligence methods, are then examined. To help the driver, these algorithms analyse the sensor data to recognise objects, forecast their behaviour, and make defensible judgements. They are essential in making features like forward collision warning, automated emergency braking, and traffic sign recognition possible. We also cover the integration of ADAS with communication systems for vehicles to vehicles (V2V) and vehicles to infrastructure (V2I). This connection enables features like cooperative adaptive cruise control and intersection collision warning by facilitating the transmission of vital information between infrastructure and automobiles.

Finally, we discuss the limitations and potential applications of ADAS technology. These include assuring reliable cybersecurity, tackling moral conundrums in algorithmic decision-making, and moving closer to completely autonomous vehicles. Overall, this offers a thorough review of ADAS, emphasising the role it plays in enhancing both driving comfort and traffic safety. The development of ADAS has opened the door to a safer and more effective future of transportation through the combination of sensors, software algorithms, and connection technologies.

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