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Technical Seminar Report **20MCA42**

on
“Advanced Driver Assistance
System”

Submitted by
Nithin
1RV21MC067

Under the Guidance
of

Dr. S Anupama Kumar
Associate Professor
Department of MCA
RV College of Engineering®
Bengaluru-59

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.

Dr. S Anupama Kumar
Associate Professor
Department of MCA
RVCE, Bengaluru –59

Dr. Andhe Dharani
Professor and Director
Department of MCA
RVCE, Bengaluru–59

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DEPARTMENT OF MASTER OF COMPUTER APPLICATIONS

Bengaluru– 560059

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.

Date of Submission:

Signature of the Student

Student Name: Nithin

USN: 1RV21MC067

Department of Master of Computer Applications

RV College of Engineering®

Bengaluru-560059

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Nithin
Department of MCA
RV College of Engineering®
Bengaluru-59

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.

Table of Contents

PARTICULARS	PAGE NO.
Title page	i
College Certificate	ii
Declaration by student	iii
Acknowledgement	iii
Abstract	iv
Table of Contents	vi
List of Tables	vii
List of Figures	vii
Chapter 1: Introduction	1-7
1.1 Introduction to the Seminar Title	1
1.2 Description of the Seminar Concept	2
1.3 Applications of Concept	4
1.4 Architecture Diagram	6
Chapter 2: Literature Review	8-11
2.1 Literature Survey	8
2.2 Summary of the literature Survey	11
Chapter 3: Technical Significance	12-19
3.1 Technological Developments	12
3.2 Tools and Technologies	16
3.3 Sustainability and Societal Concern	17
3.3 Conclusion	19
Bibliography	21-23

List of Tables

TABLE NO.	PARTICULARS	PAGE NO.
3.1	Comparison of ADAS in Indian roads and USA roads	15

List of Figures

FIGURE NO.	PARTICULARS	PAGE NO.
1.1	Architecture Diagram of Advanced Driver Assistance System	6
3.1	Advanced Driver Assistance System Features	14