

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY,
BELAGAVI**



A PROJECT REPORT ON

**USING LAYER-WISE TRAINING FOR ROAD
SEGMENTATION IN AUTONOMOUS CAR**

Submitted in partial fulfillment of the award of degree in

BACHELOR OF ENGINEERING

IN

INFORMATION SCIENCE & ENGINEERING

By

YASHAVARDHAN SG	4AL20IS041
SUDEEP K	4AL20IS049
DIYA HB	4AL20IS016
SUSHMA KN	4AL20IS053

**Under the Guidance of
MR . PRADEEP NAYAK
ASSISTANT PROFESSOR**



**DEPARTMENT OF INFORMATION SCIENCE & ENGINEERING
ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY
MOOBBIDRI-574225, KARNATAKA
2023 – 2024**



DEPARTMENT OF INFORMATION SCIENCE & ENGINEERING
CERTIFICATE

This is to certify that the Project entitled "Using Layer-Wise Training For Road Segmentation In Autonomous Car" has been successfully completed by

YASHAVARDHAN SG	4AL20IS041
SUDEEP K	4AL20IS049
DIYA HB	4AL20IS016
SUSHMA KN	4AL20IS053

the bonafide students of Alva's Institute of Engineering and Technology in DEPARTMENT INFORMATION SCIENCE & ENGINEERING Moodubidire, affiliated to VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI , during the year 2023-2024. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The Project report has been approved as it satisfies the academic requirements in respect of Project work prescribed in partial fulfillment of awarding Bachelor of Engineering Degree.

Mr. Pradeep Nayak
Assistant Professor
Project Guide

Dr. Sudheer Shetty
Professor
HOD - IE
Dept. Of Information Science & Engineering
Alva's Institute of Engg. & Technology
Mijar, MOODBIDRI - 574 225

Dr. Peter Fernandes
Principal
Alva's Institute of Engg. & Technology
Mijar, MOODBIDRI - 574 225, D.K.

Name of the Examiners

1. Dr. Sudheer Shetty
2. Dr. Ritesh Parkala

Signature with Date

30/05/24

30/05/24

ABSTARCT

A recently developed application of computer vision is path finding in self-driving cars. Semantic scene understanding and semantic segmentation, as subfields of computer vision, are widely used in autonomous driving. Semantic segmentation for path finding uses deep learning methods and various large sample datasets to train a proper model. Due to the importance of this task, accurate and robust models should be trained to perform properly in different lighting and weather conditions and in the presence of noisy input data. In this paper, we propose a novel learning method for semantic segmentation called layer-wise training and evaluate it on a light efficient structure called an efficient neural network (ENet). The results of the proposed learning method are compared with the classic learning approaches, including mIoU performance, network robustness to noise, and the possibility of reducing the size of the structure on two RGB image datasets on the road (CamVid) and off-road (Freiburg Forest) paths. Using this method partially eliminates the need for Transfer Learning. It also improves network performance when input is noisy.