



Department of Electrical and Computer Engineering
North South University

Senior Design Project

LINE FOLLOWING AUTOMATED CAR DETECTING SIGN

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GROUP 3
SECTION 16

Faculty Advisor:
Md. Shahriar Hussain
Senior Lecturer
ECE Department
Spring, 2023

LETTER OF TRANSMITTAL

June, 2023

To

Dr. Rajesh Palit

Chairman,

Department of Electrical and Computer Engineering

North South University, Dhaka

Subject: Submission of Research Report on “LINE FOLLOWING AUTOMATED CAR DETECTING SIGN”

Dear Sir,

With due respect, we would like to submit our capstone project report on “Line following automated car detecting sign” as a part of our BSc program. The report deals with multiple disease detection. This project was very much valuable to us as it helped us gain experience from practical field and apply in real life. We tried to the maximum competence to meet all the dimensions required from this report.

We will be highly obliged if you kindly receive this report and provide your valuable judgment. It would be our immense pleasure if you find this report useful and informative to have an apparent perspective on the issue.

Sincerely Yours,

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Shadman Haque

ECE Department

North South University, Bangladesh

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SM Monjurul Alam

ECE Department

North South University, Bangladesh

.....

Maheenul Hoque Chowdhury

ECE Department

North South University, Bangladesh

APPROVAL

Shadman Haque (1911707642), Sm Monjurul Alam (1921337042) and Maheenul Hoque Chowdhury (1921133642) from Electrical and Computer Engineering Department of North South University, have worked on the Senior Design Project titled “Line following automated car detecting sign” under the supervision MD. Shahriar Hussain partial fulfillment of the requirement for the degree of Bachelors of Science in Engineering and has been accepted as satisfactory.

Supervisor’s Signature

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MD. Shahriar Hussain

Senior Lecturer

Department of Electrical and Computer Engineering

North South University

Dhaka, Bangladesh.

Chairman’s Signature

.....

Dr. Rajesh Palit

Professor

Department of Electrical and Computer Engineering

North South University

Dhaka, Bangladesh.

DECLARATION

The contents of this project are solely the result of our own efforts, as this paper indicates in a clear and unmistakable manner. There has been no submission of this work, either in its entirety or in part, for any other degree or diploma at any other educational establishment. Without the express permission of the project manager, it is strictly forbidden to disclose or disseminate any information linked to the project in a public setting without authorization. This paper acknowledges substantial earlier research and contains references that are essential to the discussion. It has been verified by the supervisor that the policy prohibiting plagiarism has been adhered to appropriately.

Students' names & Signatures

1. Shadman Haque

2. Sm Monjurul Alam

3. Maheenul Hoque Chowdhury

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In addition, the authors express their gratitude to the Department of Electrical and Computer Engineering at North South University, Bangladesh for their support in conducting the research. The authors express their gratitude to their loved ones for their numerous sacrifices and unwavering support.

ABSTRACT

AUTOMATED CAR

The advent of autonomous vehicles has transformed the transportation sector by offering more accessibility, reduced energy consumption, and improved safety. The ESP32-CAM module, which is equipped with a built-in camera, possesses a useful attribute: robustness. The module will be employed to construct a model of an autonomous car for the project's operation. The objective of the project is to provide dependable navigation and obstacle detection in many scenarios by leveraging computer vision techniques, cloud connectivity, and edge processing capabilities in a mutually beneficial manner. These technological innovations will enable us to accomplish our objective. The CPU is responsible for processing data from sensors, controlling motors, capturing real-time images, and enabling wireless connectivity. The algorithms developed on the microcontroller enable the identification and classification of elements in the vehicle's environment, such as lanes, barriers, and pedestrians. This is achieved by examining the frames captured by the camera. This study establishes the foundation for developing a versatile and user-friendly automated vehicle prototype with the microcontroller. It could potentially stimulate further research in this captivating domain and potentially contribute to the progress of technologies for autonomous vehicles. This is due to its integration of advanced technologies such as cloud connectivity, computer vision, and edge process.