RICE LEAF DISEASE DETECTION USING

TRANSFER LEARNING

A PROJECT REPORT

***Submitted by***

|  |  |
| --- | --- |
| Abhishek Bhattacharya (7th Semester) | 2101020003 |
| Roshan Gupta (7th Semester) | **2101020024** |
| Prashant Kumar Pradhan (7th Semester) | **2101020455** |

*In partial fulfilment for the award of the degree of*

BACHELOR OF TECHNOLOGY

IN

COMPUTER SCIENCE AND ENGINEERING



# C.V. RAMAN GLOBAL UNIVERSITY

# BHUBNESWAR- ODISHA -752054



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**BONAFIDE CERTIFICATE**

Certified that this project report **"Rice Leaf Disease Detection using Transfer Learning"** is a 7th Semester Bonafide work submitted by **Abhishek Bhattacharya,** **7th Semester, 2101020003, Roshan Gupta, 7th Semester, 2101020024,** **Prashant Kumar Pradhan, 7th Semester, 2101020455.**CGU-Odisha, Bhubaneswar who carried out the project under my supervision.

Dr. Monalisa Mishra

**HEAD OF THE DEPARTMENT**

Department of Computer Science & Engineering

Dr. Mamata P. Wagh

**SUPERVISOR**

Associate Professor, Department of Computer Science & Engineering

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**CERTIFICATE OF APPROVAL**

This is to certify that we have examined the project entitled **"Rice Leaf Disease Detection using Transfer Learning"** is Bonafide work submitted by **Abhishek Bhattacharya,** **7th Semester, 2101020003, Roshan Gupta, 7th Semester, 2101020024,** **Prashant Kumar Pradhan, 7th Semester, 2101020455.** CGU-Odisha, Bhubaneswar.

We hereby agree with our approval of it as a 7th Semester major project carried out and presented in a manner required for its acceptance for the partial fulfillment for **Bachelor Degree of Computer Science and Engineering** for which it has been submitted. This approval does not necessarily endorse or accept every statement made, opinion expressed, or conclusions drawn as recorded in this major project, it only signifies the acceptance of the major project for the purpose it has been submitted.

Dr. Mamata P. Wagh

**SUPERVISOR**

Associate Professor

**DECLARATION**

I declare that this project report titled **Rice Leaf Disease Detection using Transfer Learning** submitted in partial fulfillment of the degree of **B. Tech in Computer Science and Engineering** is a record of original work carried out by me under the supervision of **Dr. Mamata P. Wagh** and has not formed the basis for the award of any other degree or diploma, in this or any other Institution or University. In keeping with the ethical practice in reporting scientific information, due acknowledgements have been made wherever the findings of others have been cited.

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| --- |
| Abhishek Bhattacharya 2101020003 |
| Roshan Gupta 2101020024 |
| Prashant Kumar Pradhan 2101020455 |

**Bhubaneswar - 752054**

21-11-2024

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| Abhishek Bhattacharya |
| Roshan Gupta |
| Prashant Kumar Pradhan |

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**ABSTRACT**

Rice, a staple food for over half the global population, is critical for ensuring food security. However, rice production is frequently threatened by diseases that drastically reduce yield and quality. Traditional disease detection methods, reliant on manual observation, are often inefficient and prone to delays in intervention. This study conducts a comparative analysis of Random Forest (RF) and InceptionResNetV2, a Convolutional Neural Network (CNN) utilizing transfer learning, for classifying rice leaf diseases. A dataset comprising rice leaf images categorized into bacterial leaf blight, brown spot, and leaf smut was utilized. Experimental results revealed that InceptionResNetV2 achieved superior performance, attaining 93% classification accuracy compared to 72% for RF. These findings underscore the effectiveness of transfer learning in enhancing disease detection accuracy and responsiveness in agricultural systems. The study concludes with recommendations for future advancements, including leveraging nature-inspired algorithms and integrating these models into agricultural monitoring platforms to support precision farming..

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