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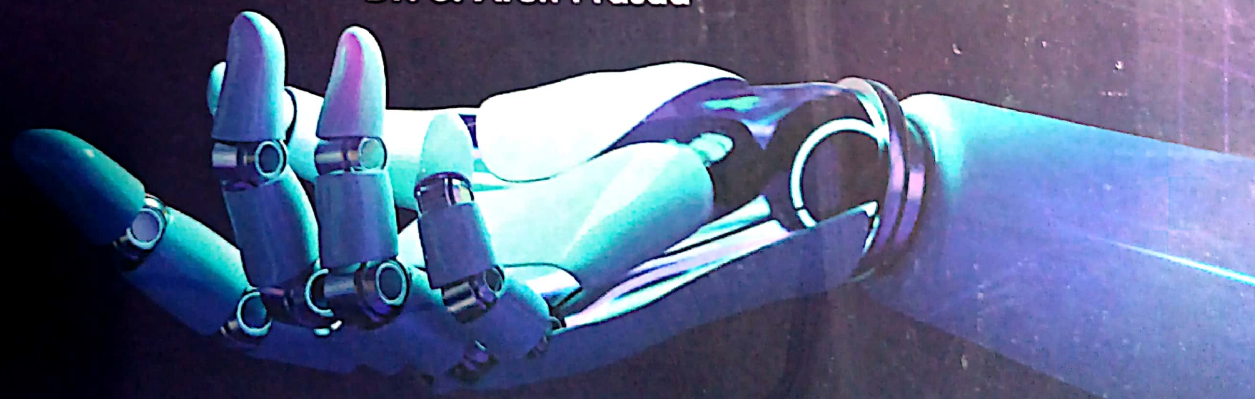

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Evolution of Deep Learning Image Classifiers for The Diagnosis of Oryza Sativa Diseases: An Investigation

Ms. J Arockia Jackuline Joni [1]* Dr. M. Mary Shanthi Rani [2]

{ arojoni12@gmail.com[1] , drmaryshanthi@gmail.com [2] }

[1]* Correspondence Author: Ms. J AROCKIA JACKULINE JONI., M.Sc., M.Phil.,(Ph.D.,)

Research Scholar, Department of Computer Science &Applications, The Gandhigram Rural Institute (Deemed To Be University), Dindigul. &Assistant Professor, Department of Computer Applications, Fatima College, Mary Land, Madurai.

[2] Research Supervisor: Dr. M. MARY SHANTHI RANI, Associate Professor, Department of Computer Science & Applications,The Gandhigram Rural Institute (Deemed To Be University), Dindigul.

Abstract:

Rice consumption is booming! This drives farmers to plant more rice (Oryza sativa), with cultivation rising 2.5% yearly across Asia. However, new diseases threaten these crops, and farmers lack information to identify infections, leading to 37% production loss.Thankfully, technology can help! This paper explores how deep learning, a cutting-edge technology, can identify rice diseases during the harvest cycle. We reviewed research on various AI classifiers used for this purpose and present the findings in a clear table.By using AI, we can empower farmers to recognize and combat rice diseases, ultimately boosting yields and food security.

Keywords: Oryza sativa, rice diseases, deep learning Vector machine support · Convolutional neural network · Multiclass SVM neural network with backpropagation.

1. INTRODUCTION:

Rice, primarily Oryza sativa, originated in China and spread across Asia, eventually becoming a global staple. Packed with nutrients, its rising demand has fuelled worldwide cultivation. Despite being third in overall crop production, it reigns supreme for human consumption (85%). China, India, and Indonesia lead production, supplying this vital food source for a large portion of the global population, including 50-60% of India alone. As world food security hinges on rice, ensuring its sustainability through continued research and innovation is crucial. India is a major rice grower but lags in production compared to other nations. This is partly due to plant diseases. Researchers aimed to leverage AI and image processing to identify these diseases and help farmers achieve