NARASARAOPETA ENGINEERING COLLEGE (AUTONOMOUS)
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
2024-2025

Batch Number	AG-11
Team Members	D. Triveni(21471A0517) B. Supriya (21471A0514) P. Bhagya Lakshmi(21471A0547)
Guide	Chalicheema. Rajani Asst.Prof
Title	A Deep Learning-Based Approach for the Detection of Infested Soybean Leaves.
Domain/Technology	DEEP LEARNING
Base Paper Link	https://ieeexplore.ieee.org/document/10247040
Dataset Link	https://www.kaggle.com/datasets/maeloisamignoni/soybeanleafdataset
Software Requirements	Browser: Any latest browser like Chrome Operating System: Windows 7 Server or later Python (COLAB)
Hardware Requirements	SystemType: Intel Core i5 or above RAM: 8 GB Number of cores:5 Number of Threads: 4
Abstract	After all, soybean crops are an essential constituent in world agriculture. These plants generally become easy prey to attacks by pests like Diabrotica speciosa and caterpillars. The early detection of these attacks is pretty significant in reducing the damage, from an economic point of view as well as an ecological one. This present study has been motivated by the above facts, proposing a newer deep learning-based solution using a transfer-learning approach with VGG19 CNN for efficient classification of soybean leaf images. In this work, we adopt the pre-trained VGG19 architecture for detecting pest infestation in soybean leaves and perform fine-tuning specific to the problem. In this work, employing transfer learning from VGG19 means utilizing the deep features learned from large-scale image datasets for adaptation in the specialized context of agricultural pest detection. This approach not only improves the model's accuracy but also reduces the dependency on huge amounts of training data, which is usually a bottleneck in agricultural applications. We test the performance of our model on a very challenging dataset of soybean leaf images, which yields a balanced accuracy of 99.5% on previously unseen test data.The contribution of this work can be both theoretical and practical.

Signature of the student(s)   **Signature of the Guide**   **Signature of the project coordinator**