NARASARAOPETA ENGINEERING COLLEGE: NARASARAOPET

(Autonomous)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Batch Number	CB1
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Guide	K Lakshminadh
Title	Advanced Pest Identification: An Efficient Deep Learning Approach Using VGG
Domain/Technology	Deep Learning
Dataset Link	https://www.kaggle.com/datasets/simranvolunesia/pest-dataset
Base Paper Link	https://ieeexplore.ieee.org/document/10382486
Software Requirements	Browser : Any Latest browser like Chrome Operating System : Windows 10 Language : Python Platform : Visual Studio Code
Hardware Requirements	Processor : Intel(R) Core™2 i7-5500U CPU @ 2.50GHz RAM : 8GB(gigabyte) System Type : 64-bit operating system, x64-based processor
Abstract	Accurate pest identification is crucial for both effective pest management and crop protection. Pests must be found early in order to minimise damage and guarantee crop security. Conventional techniques typically entail visual examination and professional involvement, which might be time-consuming and susceptible to errors by humans. On the other hand, deep learning-powered high-performance systems can now more accurately identify pests thanks to developments in computer vision. In this work, we employed the Keras-based deep learning models VGG16 and VGG19 to construct a passive pest detection system. We greatly improved the efficacy of these models in identifying pest species by using strategies such data augmentation, model optimisation, and modification of validated models. The VGG16 model produced an amazing accuracy rate of 99.8% and VGG19 model produced an accuracy of 96.8 % in our testing. *Key Words* - Deep Learning, Pest Identification, Convolutional Neural Networks (CNN), Feature Extraction, Transfer Learning, Image Classification.