NARASARAOPETA ENGINEERING COLLEGE (AUTONOMOUS)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

2025-2026

Batch Number	BB-7
Team Members	P.Nayeem (**22471A05B5**) AVarun Yadav (22471A0571) K.Purna Chandra Rao (22471A05A5)
Guide	Ch. Rajani, M.Tech
Title	**GrowSmart-AI: An Integrated Deep Learning Framework for Smart Crop Recommendation and Disease Diagnosis in Precision Agriculture**
Domain/Technology	DEEP LEARNING
Base Paper Link	**https://ieeexplore.ieee.org/document/10843189**
Dataset Link	**https://www.kaggle.com/datasets/atharvaingle/crop-recommendation-dataset** **https://www.kaggle.com/datasets/emmarex/plantdisease**
Software Requirements	Browser: Any latest browser like Chrome Operating System: Windows 7 Server or later Python (JUPITER)
Hardware Requirements	SystemType: Intel Core i5 or above RAM: 8 GB Number of cores:5 Number of Threads: 4
Abstract	**GrowSmart** is an intelligent agriculture support system that leverages both **Machine Learning** and **Deep Learning** techniques to improve decision-making for farmers. The system integrates **soil parameters (N, P, K, pH, rainfall)** and **real-time weather data** to provide precise **crop recommendations** using supervised models like **Random Forest**. To enhance plant disease identification, we upgrade from traditional ResNet9 to **EfficientNet**, enabling high-accuracy leaf image classification while maintaining computational efficiency. By combining **predictive analytics** with **image-based disease detection**, GrowSmart aims to assist farmers in maximizing yield, reducing losses, and making informed decisions. The model is trained and tested on publicly available datasets like the **Kaggle Crop Recommendation** and **PlantVillage** datasets. This hybrid system bridges the gap between data-driven agriculture and practical field usability, offering scalable potential for **low-resource rural settings** and supporting the broader vision of **precision agriculture in India**.

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