NARASARAOPETA ENGINEERING COLLEGE (AUTONOMOUS)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

2024-2025

Batch Number	DG3
Team Members	K.Ramya (21471A05N0) Ch.Jyothika(21471A05M2) K.Supriya(22475A0519) K.Vydurya(18471A05K3)
Guide	Dr.M.Sireesha M.Tech,Ph.D.
Title	Deep Learning Framework for Early Fire and Smoke Detection
Domain/Technology	DEEP LEARNING
Base Paper Link	https://fireecology.springeropen.com/articles/10.1186/s42408-022-00165-0
Dataset Link	1.https://drive.google.com/drive/folders/1YdVGc_psxD59bb4etRzA3Cl YnJge2W7I?usp=drive_link (Google Drive). 2. gbdi / BowFire Dataset / Downloads — Bitbucket
Software Requirements	Browser: Any latest browser like Chrome Operating System: Windows 7 Server or later Python (COLAB)
Hardware Requirements	System Type: Intel Core i3 or above RAM: 8 GB Number of cores:3 Number of Threads: 4
Abstract	Most of the forest fires pose threats to ecological balance and human life, maximizing losses with respect to degrading the environment. The traditional techniques for smoke detection are less efficient because they use sensor systems, which lead to delayed fire detection. It is based on the suggestion of this research related to the idea of deep learning with pre trained convolutional neural networks (VGG16, InceptionV3, and Xception) for early fire and smoke detection. The models are tested on two datasets: one is public, and the other is contributed by the authors in this paper. Substantial improvements were found in experimental results, as well as the best detection accuracy reached 94% during feature extraction and 89% after fine-tuning for InceptionV3. Such a finding proves the full capability of CNN-based approaches to provide real-time fire detection solutions, with their ability to make fire detection systems more efficient and to better enhance early response capabilities toward reducing the severe impact of forest fires.

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