

Supplementary Material

1. Dataset Availability

The augmented corn leaf disease dataset generated using the proposed RL-NST framework has been deposited in Zenodo and is publicly accessible.

The dataset details are as follows:

- Total images: 4,776
 - Common Rust: 960
 - Leaf Blight: 783
 - Leaf Spot: 944
 - Streak Virus: 1,890
 - Healthy: 199
- Image format: JPEG
- Resolution: 224 * 224

The dataset is an extension of existing resources including PlantVillage, CCMT], and field-collected samples.

The dataset can be accessed at: <https://zenodo.org/records/17115480>

2. Implementation Code

The complete implementation code of the proposed Reinforcement Learning-based Neural Style Transfer (RL-NST) framework is publicly available. The code includes scripts for:

- Dataset preprocessing
- Training the RL-NST model
- Evaluating the generated augmented images

The GitHub repository can be accessed at: <https://github.com/kanch-git/RL-NST>

The repository contains:

- `rl_nst_model.py` – Defines the NST model with residual connections
- `rl_agent.py` – Implements the reinforcement learning agent for parameter optimization
- `utils.py` – Utility functions for data preprocessing and image handling
- `train_rl_nst.py` – Script for training the RL-NST model on corn leaf images
- `requirements.txt` – List of Python dependencies for running the project

3. Confusion Matrix of Pre-Trained Models

AlexNet

True Labels	Common Rust	93	2	1	2	2
	Leaf Blight	2	92	2	3	1
	Leaf Spot	2	2	93	1	2
	Streak Virus	2	3	2	92	1
	Healthy	3	2	2	2	91
		Common Rust	Leaf Blight	Leaf Spot	Streak Virus	Healthy

Predicted Labels

InceptionV3Net

True Labels	Common Rust	98	1	0	0	1
	Leaf Blight	1	98	0	0	1
	Leaf Spot	0	1	98	0	1
	Streak Virus	0	0	1	98	1
	Healthy	1	0	1	1	97
		Common Rust	Leaf Blight	Leaf Spot	Streak Virus	Healthy

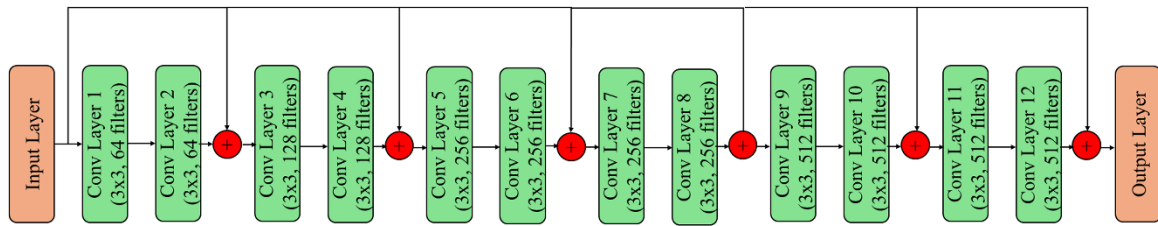
Predicted Labels

VGG19Net

True Labels	Common Rust	96	2	0	1	1
	Leaf Blight	2	94	1	1	2
	Leaf Spot	1	1	95	1	2
	Streak Virus	1	1	2	94	2
	Healthy	1	1	2	1	95
		Common Rust	Leaf Blight	Leaf Spot	Streak Virus	Healthy

Predicted Labels

4. Layered architecture of proposed NST technique



5. Layered architecture of the proposed RL framework

