NTIRE 2025 Competition Factsheet

1. Team Details

Team Name: JNUcodecs

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Team Members:

- SAAD SAMEER INAMDAR
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- GAJENDRA KUMAR MINA
- RITANSHU PRASAD

Team Website (if any): N/A

Affiliation: School of Engineering, Jawaharlal Nehru University

Affiliation with NTIRE 2025 Sponsors: N/A

Best Scoring Entries During Development/Validation Phase: 18.44

Link to Codes/Executables: https://github.com/dsangule/NTIRE2025_Dn50_challenge

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2. Method Details

General Method Description

Our solution is based on a deep learning approach for image denoising using a DUDnCNN model. The network employs a deep convolutional architecture with dilated convolutions to enhance receptive fields and extract fine-grained details from noisy images. The model is trained end-to-end to learn the mapping from noisy images to their clean counterparts.

Pipeline Overview

1. **Preprocessing:** Images are resized to 256x256 and normalized.
2. **Model Architecture:** Uses a deep convolutional network with dilated convolutions.
3. **Training Strategy:** Trained using mean squared error (MSE) loss.
4. **Test-Time Augmentation (TTA):** Horizontal flipping applied.
5. **Post-processing:** Bilateral filtering and sharpening applied for enhanced results.

Training Strategy

- **Optimization Method:** Adam optimizer with default parameters.
- **Learning Rate Schedule:** Initially set to 1e-3, reduced by a factor of 10 after plateaus.
- **Batch Size:** 4
- **Patch Size:** 256x256

Experimental Results

- **Performance Metrics:** 18.44/0.45
- **Inference Time:** Average runtime per image is approximately 0.30 seconds.

Additional Details

- **Total Method Complexity:**
    - GPU: T4 x2
    - Runtime: 57s