

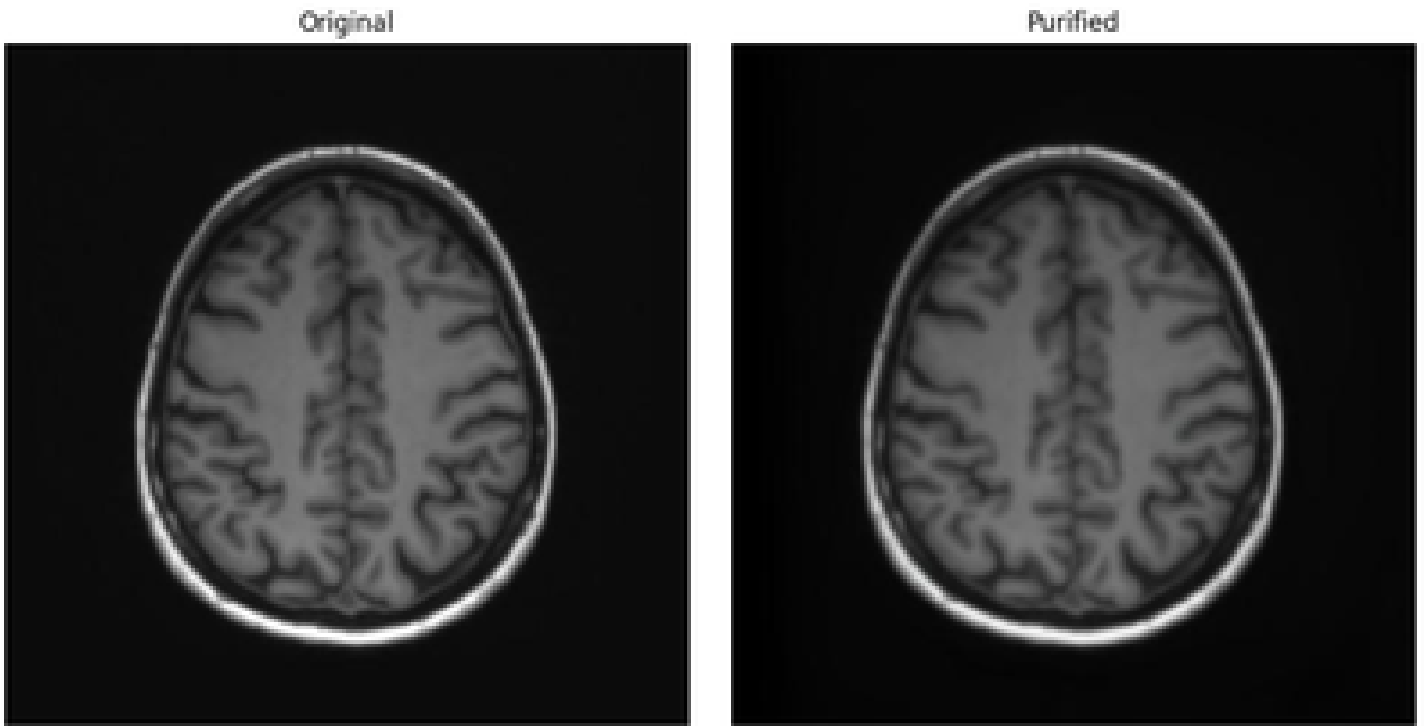
Adversarial MRI Defense System Report

MRI Adversarial Purification Report

Generated on: 2025-04-19 23:14:53

Image: mri_healthy_1.jpeg

Comparison: Original (left) vs. Purified (right)



Purification Metrics

PSNR: 34.65 dB

SSIM: 0.8819

Interpretation of Metrics:

PSNR (Peak Signal-to-Noise Ratio): 34.65 dB

This indicates excellent image quality after purification. Higher PSNR values indicate better quality.

SSIM (Structural Similarity Index): 0.8819

Adversarial MRI Defense System Report

This indicates good structural preservation. SSIM values above 0.7 typically indicate good perceptual quality.

Technical Details

Purification Model:

This purification was performed using a U-Net based deep learning model with attention mechanisms. The model was trained in two phases:

1. Phase 1: Initial training with pixel-wise and perceptual losses to learn the mapping from adversarial to clean images.
2. Phase 2: GAN-based fine-tuning with a PatchGAN discriminator for improved sharpness and detail preservation.

The model incorporates self-attention mechanisms, residual connections, and multi-scale feature fusion to effectively remove adversarial perturbations while preserving important diagnostic features.