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**BlurFix: Efficient Image Blind Motion Deblurring Using
Generative Adversarial Network**

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ABSTRACT

Most real-world images are degraded by motion blur due to either camera shake or fast moving objects. This prevails as a great challenge for many applications in computer vision such as object detection and scene understanding, which really require clear images. Blind motion deblurring aims to restore sharp images from blurry ones without any prior knowledge of the blur kernel. Real and effective deblurring remains a big challenge due to detail retention and avoiding artifacts. Even though the recent advances in deep learning and, particularly, Generative Adversarial Networks have shown some promising work for this task, they utilize a high computational cost.

This work presents a Mobile Vision Transformer (MobileViT) enhanced Wasserstein GAN with gradient penalty (WGAN-GP) efficient blind motion deblurring framework. pairing a spectrally normalised discriminator for stable training with a U-Net style generator with MobileViT blocks for multi-scale feature fusion and global-local representation learning. The proposed architecture combines important developments including a hybrid CNN-Transformer generator using inverted residual blocks and skip connections to preserve high-frequency details, a perceptual loss formulation including VGG-16 features alongside adversarial and L1 losses (Mean Absolute error) and lightweight patch-based discrimination using spectral normalising for enhanced training stability.

Using the GOPRO dataset, experiments show that our model maintains a lower computational complexity than equivalent GAN-based deblurring techniques while obtaining competitive PSNR/SSIM measurements.

Subject Descriptors:

- Computing Methodologies → Artificial Intelligence → Computer Vision
- Computing methodologies → Machine learning → Machine learning approaches → Generative Adversarial Networks

Keywords: Blind Motion Deblurring, Deep Learning, Computer Vision, Generative Adversarial Network