A GAN-Powered Web Framework for Multi-Domain Artistic Style Transfer

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Abstract: *This project aims to develop a comprehensive Art Style Transfer System utilizing Generative Adversarial Networks(GANs)to enhance artistic expression across multiple media, including static images, videos, and live camera feeds. By merging the content of one image with the stylistic elements of another, this system seeks to generate visually compelling outputs that maintain the integrity of the original content while embodying the characteristics of selected artworks. The proposed solution employs a multi-faceted approach: using CycleGANs for image style transfer, Temporal Coherence (Teco)GANs for video style transfer, and Fast Style Transfer techniques for real-time applications with live camera action. The generator in each model synthesizes stylized outputs, while the discriminator assesses the authenticity of these outputs, ensuring high fidelity in the final results. Training the models on a diverse dataset of artworks paired with corresponding content images allows for the refinement of the style transfer process across different media types. To facilitate user interaction, the project features a web-based application developed using Flask, enabling users to upload source images and videos while selecting desired artwork styles. For live camera integration, the application leverages efficient algorithms to deliver immediate stylistic transformations in real time. The backend, built with TensorFlow and Keras, manages the training and inference processes of the various models. This project demonstrates the versatility and effectiveness of GANs and associated techniques in achieving high-quality art style transfer across multiple platforms, providing a novel tool for artists, designers, and enthusiasts to explore their creativity while showcasing the intersection of technology and art..*

Keywords: Art Style Transfer, GANs, CycleGAN, Temporal CoherenceGAN, Fast Style Transfer, Real-Time Video, Live Camera Feed, TensorFlow, Keras, Flask, Neural Style Transfer, Artistic Expression, Deep Learning