Implementasi Neural Style Transfer Menggunakan VGG19 untuk Menggabungkan Konten Lukisan Mona Lisa dengan Gaya Lukisan Picasso

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*Abstract*— Penelitian ini mengimplementasikan teknik *Neural Style Transfer* untuk menciptakan karya seni digital baru dengan menggabungkan konten dari satu gambar dengan gaya dari gambar lainnya. Proyek ini secara spesifik bertujuan untuk menerapkan gaya artistik dari lukisan karya Picasso ke dalam struktur konten lukisan ikonik Mona Lisa. Metode yang digunakan adalah dengan memanfaatkan model *Convolutional Neural Network* (CNN) VGG19 yang telah dilatih sebelumnya sebagai pengekstrak fitur. Fungsi *loss* gabungan yang terdiri dari *content loss* dan *style loss* (dihitung menggunakan *Gram Matrix*) diminimalkan untuk mengoptimalkan gambar hasil. Proses pelatihan dijalankan selama 5000 *epoch* menggunakan *optimizer* Adam dengan *library* TensorFlow dan Keras. Hasilnya adalah sebuah gambar yang secara visual berhasil mempertahankan konten Mona Lisa sambil mengadopsi palet warna, tekstur, dan pola khas dari gaya Picasso. Proyek ini menunjukkan efektivitas VGG19 dalam tugas transfer gaya dan keberhasilan pendekatan optimisasi iteratif untuk menghasilkan karya seni hibrida yang koheren.

Keywords— Neural Style Transfer, VGG19, Computer Vision, Deep Learning, Transfer Gaya, Seni Komputasional.

# Introduction (*Heading 1*)

Neural Style Transfer adalah sebuah teknik revolusioner dalam bidang *computer vision* yang memungkinkan penciptaan karya seni visual baru dengan memadukan dua elemen dari gambar yang berbeda: konten (struktur objek) dari satu gambar dan gaya (tekstur, warna, pola) dari gambar lainnya. Teknik ini memanfaatkan kekuatan jaringan saraf tiruan konvolusional (*Convolutional Neural Network* atau CNN) yang telah dilatih sebelumnya pada dataset besar, seperti VGG19. Model ini mampu memisahkan representasi konten dan gaya dari sebuah gambar, yang kemudian dapat dimanipulasi dan digabungkan kembali untuk menghasilkan output yang artistik.

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*a**b* 

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