

Proposal for Neural Style Transfer with Google Colab

1) Names, IDs, and Emails of the Students

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2) General Problem Description

Neural Style Transfer (NST) applies the artistic style of one image to another, combining content and style. This project utilizes pre-trained neural networks on Google Colab to generate high-quality results efficiently. The primary challenge is to balance style preservation while retaining the original image's content. Colab's cloud resources make it accessible and cost-effective.

3) Why You Chose This Project

- Personal Interest: Combining AI and creativity aligns with our passion for technology and art.
- Monetary Gain: AI-generated art has commercial potential in content creation, personalized designs, and marketing.
- Impact on Society: The project democratizes access to artistic tools, benefiting industries like design, entertainment, and education.

4) The Designed Implementation

The project is implemented in Python using PyTorch on Colab. Key steps:

- Preprocessing images (resizing, normalizing) for model compatibility.
- Extracting features using a pre-trained CNN like VGG19.
- Combining content and style losses for optimization with Adam.
- Refining outputs in postprocessing for enhanced quality.

5) General Description of the Experiments

Experiments will test style-content pairings, parameter variations (e.g., loss weights, iterations), and compare results with alternative techniques. Visual appeal and metrics like MSE and SSIM will be used for evaluation. Outputs will also be tested for consistency and applicability in real-world creative tasks.