

CSCI 1430: Optimizing Integration Techniques for Multi-style Neural Style Transfer

Faculty Sponsor: James Tompkin

Group members: Musa Tahir (capstone), Marco Ayala, Adam Remels, Denise Danielle Tamesis

Abstract

In this project, we explored three different integration techniques for implementing multi-style neural style transfer. The first two focused on combining gram matrices (style representations) through averaging, while the third weighted each of the gram matrix losses depending on which style image was prioritized. After sufficient training, each of these techniques produced a result image that preserves the content of one image while mixing the styles of any number of style images. Evaluating our outputs visually, we found that our third method was the most robust in representing nuanced style weights. Depending on what style images are used, this flexibility enables our model's users to utilize domain experience, selectively prioritizing certain style images. Such techniques of Multi-style NST can be utilized by artists as a creative tool to generate novel artistic content. However, this facilitates the need for discussion around the ethics of digital art recreation and what constitutes “novel” art. Although manual visual inspection was a valid approach to evaluating our blended outputs, future work of this project would focus on utilizing an aesthetic classifier for a more efficient, objective, and scalable evaluation method requiring less time and resources.

More visuals and details related to our project can be found [here](#).