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CSCI-731
Project Proposal

I would like to learn more about neural style transfer, and how a combination of advanced neural networks and image processing techniques can be combined to create tools for creative expression.

Neural style transfer is a topic I am already somewhat familiar with. It is the process of using a neural network to replace low-frequency features of an image with low-frequency features from a work of art, while keeping the high-frequency features in place.

I would like to explore extensions of neural style transfer in two areas. The first is an exploration the uses and limits of naive style transfer for a sequence of frames. The second is an application of video object segmentation—that is to say, extracting a portion of the image to stylize and leaving the rest of the image intact. I will not be exploring the application of temporal loss to style transfer for video, nor will I attempt a real-time implementation of any of these networks, if I attempt a direct implementation at all.

My inputs will be a video, and my outputs will be a video that has been enhanced by both of the above techniques. I hope to have a model working that can transform a minute of video in roughly an hour of real time processing.

I will work alone.

Prof. Kinsman: Thank you for giving us the freedom to work on what we are truly passionate about.