

Deep Color Matching with Parametric Sliders

Siddhant Jain
Carnegie Mellon University

Mentors : Kevin Wampler, Oliver Wang, Kalyan Sunkavalli, Eli Shechtman

Color Grade your videos like a pro*

*With a little help from deep learning

Abstract

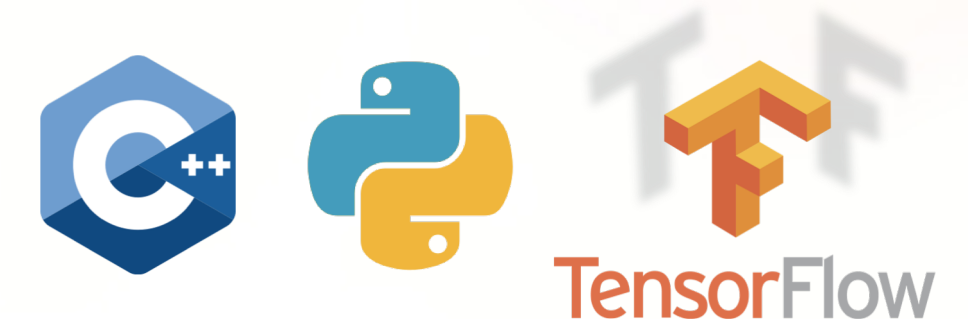
Color grading is a standard workflow in multiple Adobe products where the user takes an image and corrects its colors for either stylistic purposes or, for basic color correction. In this project we explored how to automatically perform color grading on an asset given a color graded example.



Relevant products



Technologies used

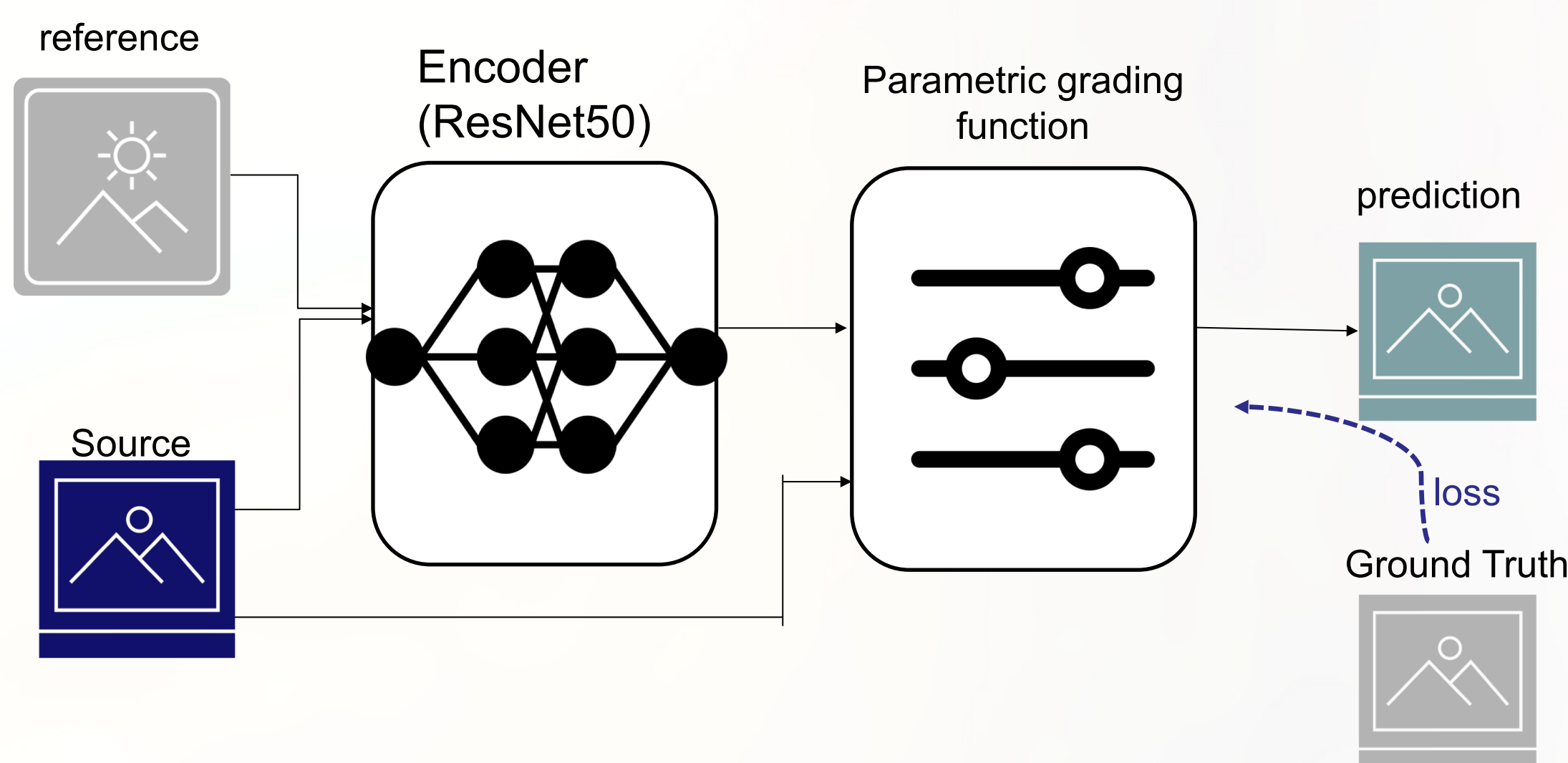


What's new?

Unlike other style transfer work, we are not just transferring the “style”, but also predicting the parameters that lead to the style. This gives a non-destructive editing feature that allows the users to refine the results to their needs. Moreover our solution can be applied to any parametric style renderer. In short what worked for Premiere Pro will work for Lightroom as well.

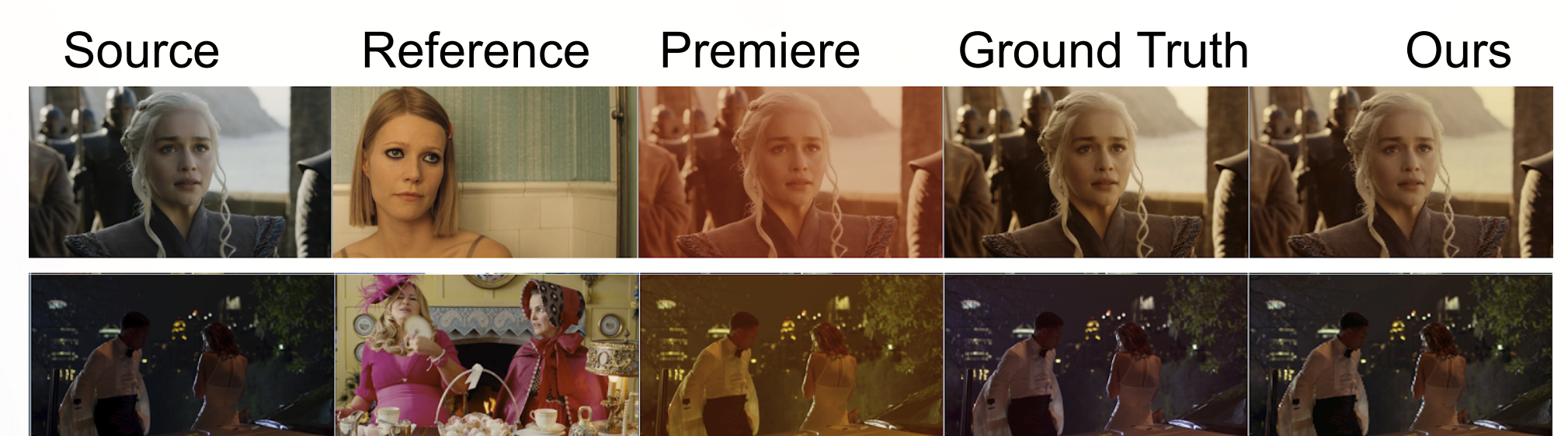
Diving Deep

We developed a deep learning based system that takes as input the reference image and a source image and predicts the parameters to apply the style on the source image. For supervision we use the loss in the predicted source image and a ground truth. Our key contribution is to embed a blackbox C++ render function into a deep network. The trick is to use numerical methods such as finite differences to approximate the gradients for any such render function and thus train the entire network end-to-end.



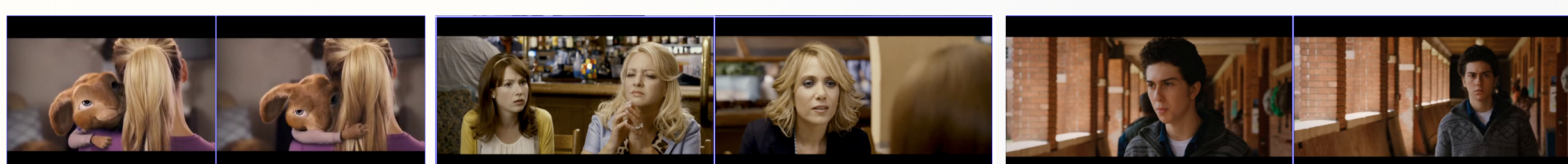
Preliminary Results

It's working! (Well, sort of. Ask me more about details on these results and our current experiments)



Watching movies (for work)

Color grading is a time consuming process which requires hours of skilled work. Thus making it tough to get a large dataset that satiates a deep network. So, we are now working on creating our own dataset by analyzing 10k+ movie trailers and extracting pairs of frame from them which are similar in style but differ in content. Some sample pairs we could extract:



Intrigued?

If this seems interesting to you, there are many ways to find out more:

1. Have a look at our code and wiki here: <https://git.corp.adobe.com/FiniteDiffNet>
2. Mail me: siddhaja@adobe.com
3. Ask me to walk you through more details, including latest results, future plans for the project and other approaches for the same problem within Adobe.

Siddhant Jain

Currently pursuing an MS in Computer Vision from Carnegie Mellon University, I am interested in applying computer vision research to empower creative expression. Prior to CMU I worked with the eLearning team at Adobe Bangalore where I worked on engineering computer vision research into enhanced video creation workflows. Graduating in December 2018, I am looking for full time opportunities!