



Add Me to the Painting

Tiancheng Zhi (tzhi), Yanzhe Yang (yanzhey)
School of Computer Science, Carnegie Mellon University



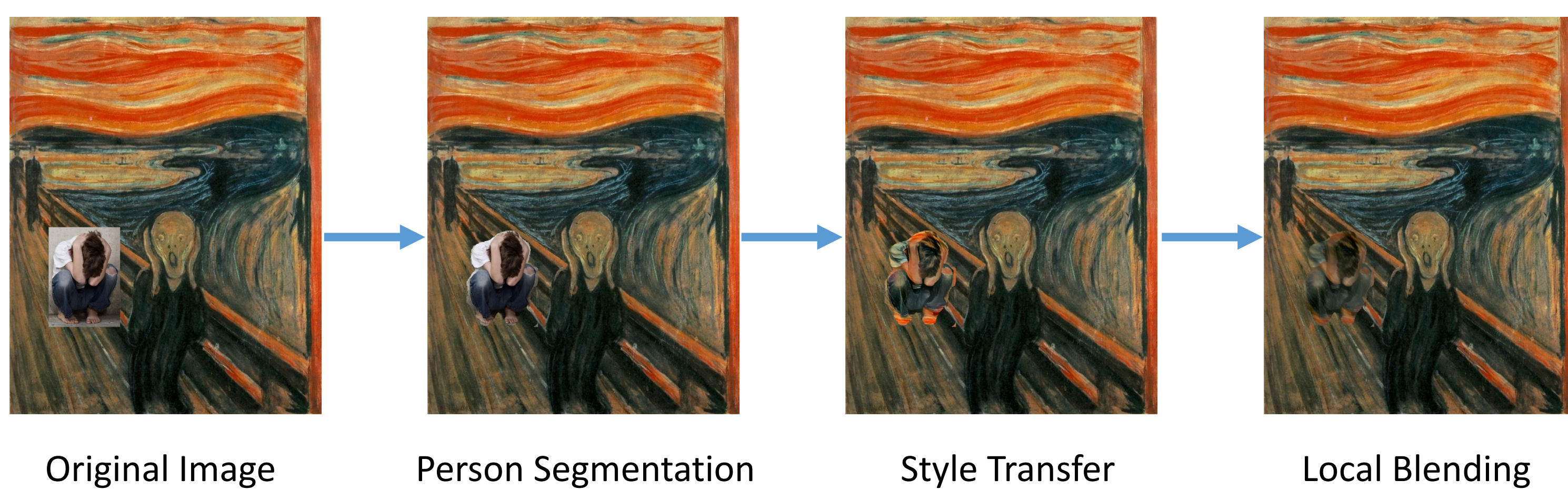
Background

- Convolutional Neural Networks (CNN) provide powerful tools for semantic segmentation and artistic style transfer.
- Traditional seamless cloning method [1] can hardly handle cross-domain problem.

Motivation and Goals

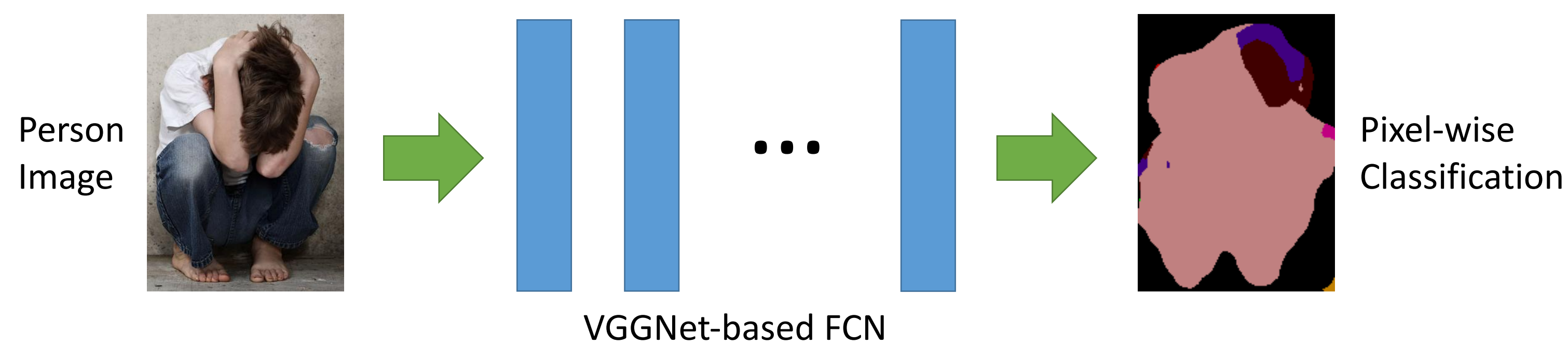
- Adding a person to a painting is a useful tool for artistic creation.
- Challenges include different lighting, color style, texture style and scene compositions.
- Our goal is to make use of convolutional neural networks to add a person to a painting.

Approach



Step 1: Person Segmentation

- Based on Fully Convolutional Neural Network (FCN) [2]



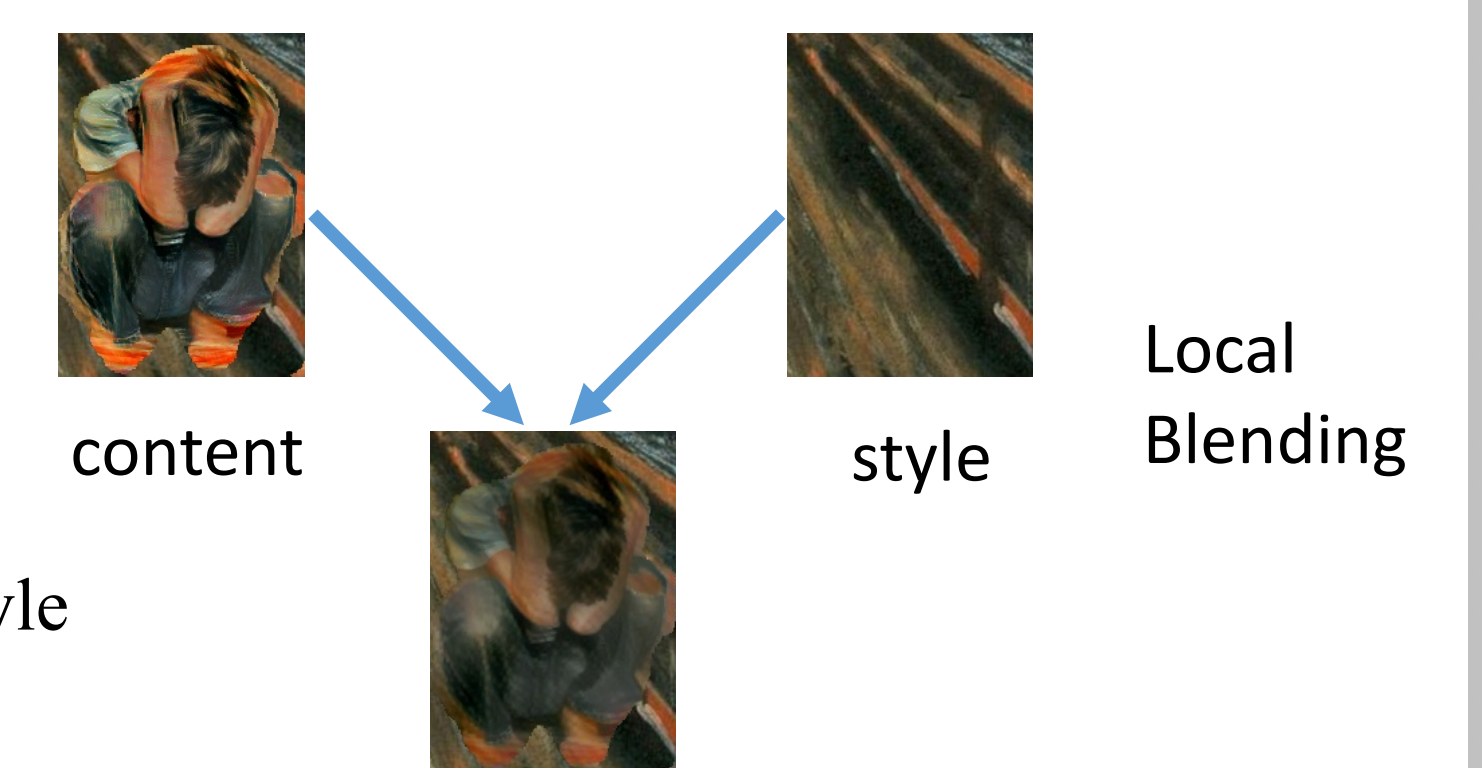
Step 2: Style Transfer

- Convolutional Neural Network (CNN) based Neural Artistic Style Transfer [3]
- Provide two options: color adapting transfer and color preserving transfer [4]



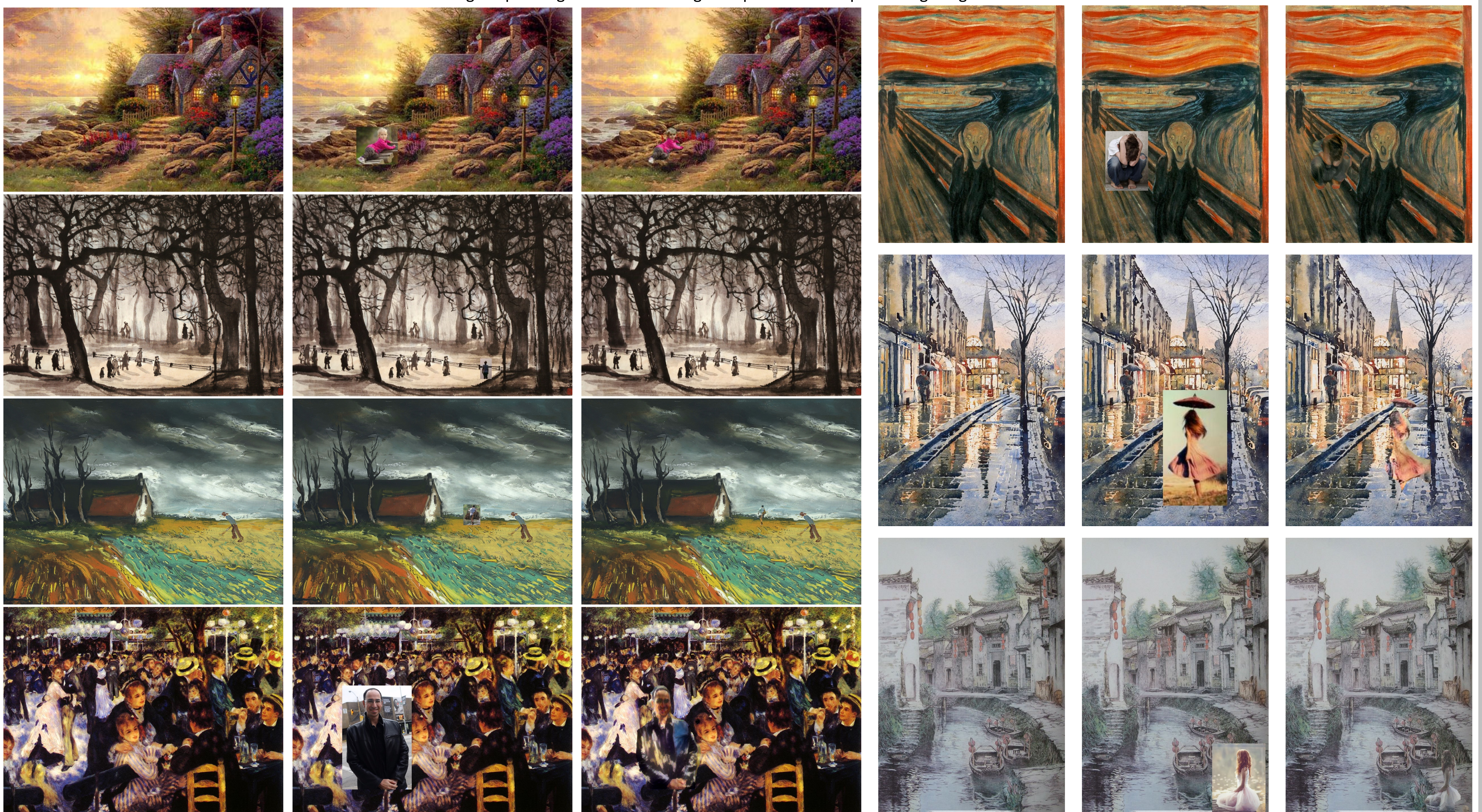
Step 3: Local Blending

- Do Neural Artistic Style Transfer again
- Cropped and transferred image as content
- Region to place person in the painting as style



Experiment Results

Left: Original painting Middle: Painting with person before processing Right: Final result



References

- [1] Pérez P, Gangnet M, Blake A. Poisson image editing[C]//ACM Transactions on Graphics (TOG). ACM, 2003, 22(3): 313-318.
- [2] Long J, Shelhamer E, Darrell T. Fully convolutional networks for semantic segmentation[C]//Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition. 2015: 3431-3440.
- [3] Gatys L A, Ecker A S, Bethge M. Image style transfer using convolutional neural networks[C]//Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition. 2016: 2414-2423.
- [4] Gatys L A, Bethge M, Hertzmann A, et al. Preserving Color in Neural Artistic Style Transfer[J]. arXiv preprint arXiv:1606.05897, 2016.