Supplementary Material - Deep Video Color Propagation

Simone Meyer[1,2]

Victor Cornillère[2]

Abdelaziz Djelouah[2]

Christopher Schroers[2]

Markus Gross[1,2]

[1] Department of Computer Science
ETH Zurich

[2] Disney Research

1 Implementation Details for Comparisons

Image Color Propagation. To extend image color propagation methods [1, 3] to video, we compute optical flow between consecutive frames [2] and use it to warp the current color image to the next frame. We compute a confidence measure for the warped colors by warping the gray scale image and taking the difference in intensities with the original gray frame. The warped colors, the confidence maps and the reference gray scale image can be used to color the second frame using the fast bilateral solver [1]. Using a very conservative threshold, the confidence map is binarized to indicate regions where colors should be propagated using deep priors [3].

References

[1] Jonathan T Barron and Ben Poole. The fast bilateral solver. In *European Conference on Computer Vision*, pages 617–632, 2016.

[2] Christopher Zach, Thomas Pock, and Horst Bischof. A duality based approach for real-time tv-l 1 optical flow. In *Joint Pattern Recognition Symposium*, pages 214–223, 2007.

[3] Richard Zhang, Jun-Yan Zhu, Phillip Isola, Xinyang Geng, Angela S Lin, Tianhe Yu, and Alexei A Efros. Real-time user-guided image colorization with learned deep priors. *arXiv preprint arXiv:1705.02999*, 2017.