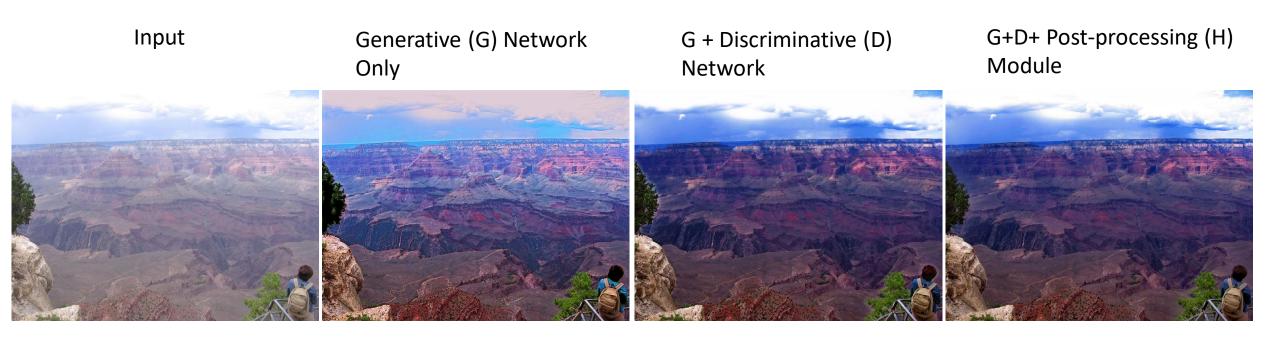
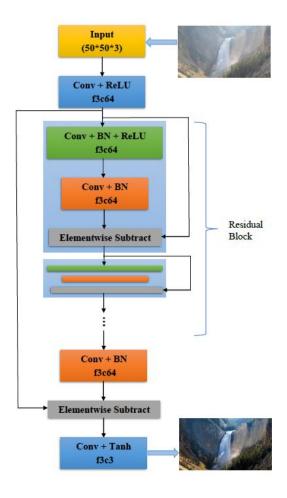
Recursive Image Dehazing via Perceptually Optimized Generative Adversarial Network (POGAN)

Overall architecture:



Generative Network







Discriminative Network

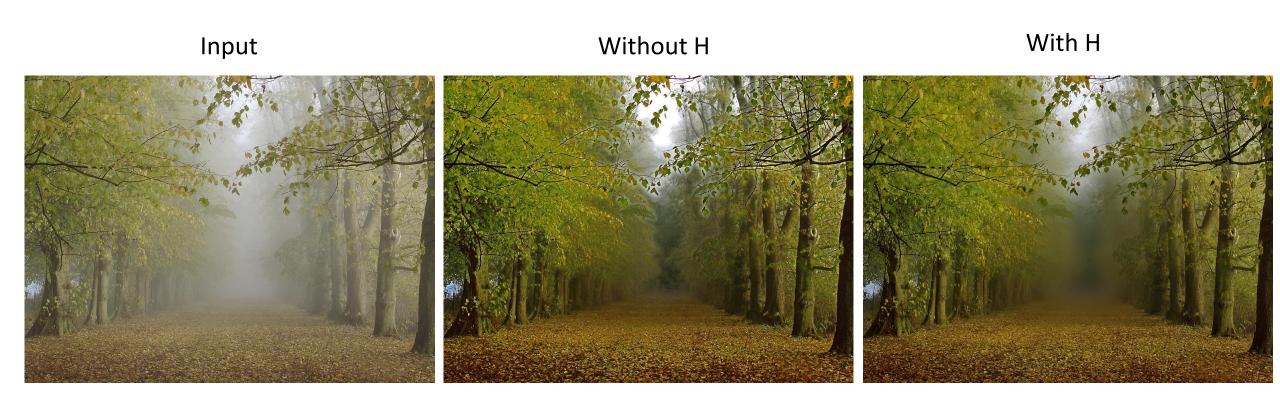
Input Without D With D







Post processing module H



Adaptive perceptual loss function

Input With fixed weights With adaptive weights







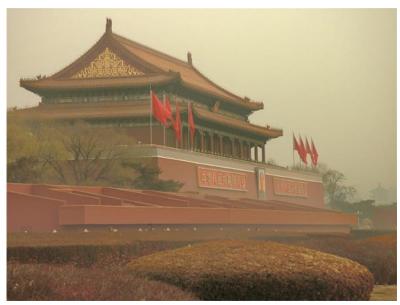
Compare against state-of-the-art

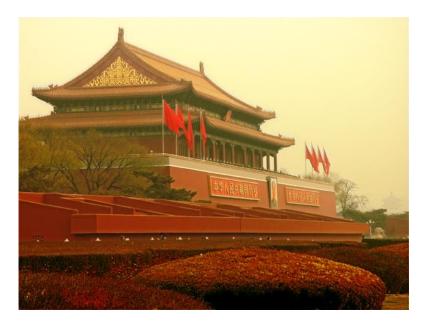
Input DCP [1] Ours

AOD [6] Input Ours

Input DehazeNet [5] Ours







Input

MSCNN [4]

Ours



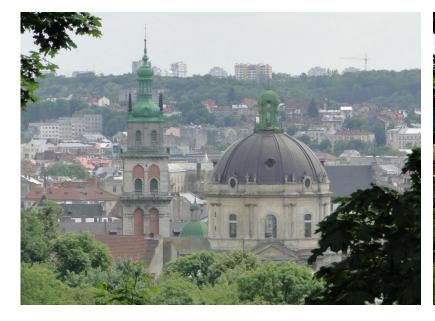
Input BCCR [2] Ours







Input NLD [3] Ours







Input GFN [7] Ours





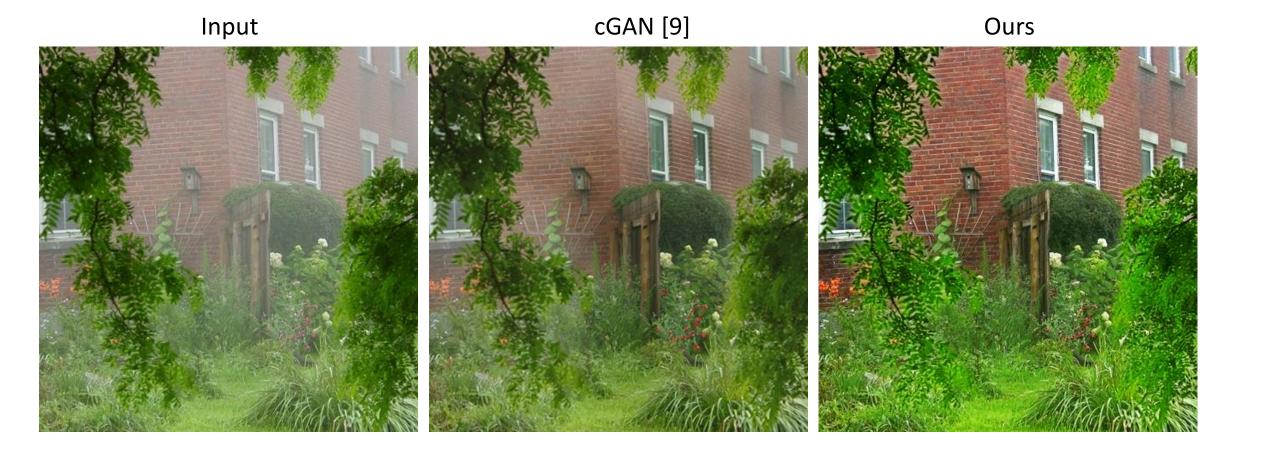


Input DCPDN [8] Ours









References

- [1] He K, Sun J, Tang X. Single image haze removal using dark channel prior. IEEE transactions on pattern analysis and machine intelligence. 2011 Dec;33(12):2341-53.
- [2] Meng G, Wang Y, Duan J, Xiang S, Pan C. Efficient image dehazing with boundary constraint and contextual regularization. In Proceedings of the IEEE international conference on computer vision 2013 (pp. 617-624).
- [3] Berman D, Avidan S. Non-local image dehazing. In Proceedings of the IEEE conference on computer vision and pattern recognition 2016 (pp. 1674-1682).
- [4] Ren W, Liu S, Zhang H, Pan J, Cao X, Yang MH. Single image dehazing via multi-scale convolutional neural networks. In European conference on computer vision 2016 Oct 8 (pp. 154-169). Springer, Cham.
- [5] Cai B, Xu X, Jia K, Qing C, Tao D. Dehazenet: An end-to-end system for single image haze removal. IEEE Transactions on Image Processing. 2016 Nov;25(11):5187-98.
- [6] Li B, Peng X, Wang Z, Xu J, Feng D. Aod-net: All-in-one dehazing network. In Proceedings of the IEEE International Conference on Computer Vision 2017 Oct 1 (Vol. 1, No. 4, p. 7).
- [7] Ren W, Ma L, Zhang J, Pan J, Cao X, Liu W, Yang MH. Gated fusion network for single image dehazing. arXiv preprint arXiv:1804.00213. 2018 Mar 31.
- [8] Zhang H, Patel VM. Densely connected pyramid dehazing network. In The IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2018 Jun.
- [9] Li R, Pan J, Li Z, Tang J. Single Image Dehazing via Conditional Generative Adversarial Network. methods. 2018;3:24.