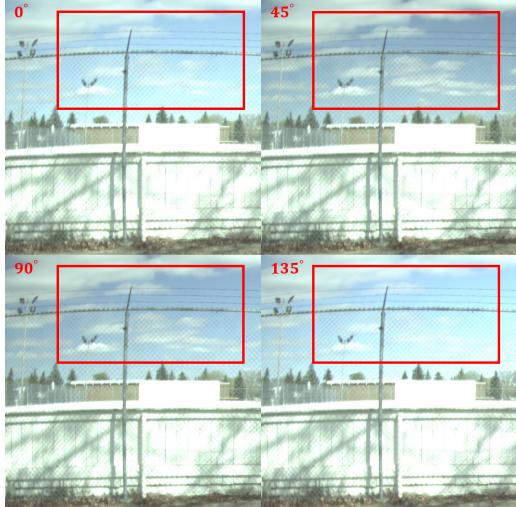


Deep HDR Reconstruction Based On the Polarization Camera

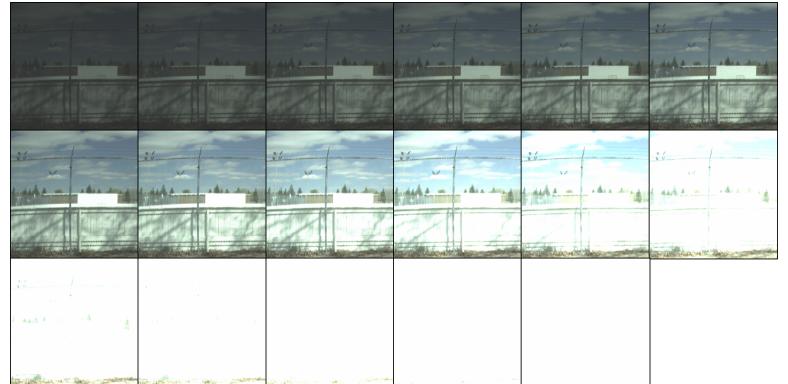
Supplementary Material

1. DATASET

Fig. 1a shows a sample image from the collected EdPolCommunity dataset, where the four polarized images are captured at $t_0 = 0.769$ ms. It illustrates that polarization is most apparent in the sky region (*i.e.* the red box) where the 45° image can better attenuate overexposure and reveal cloud details. Fig. 1b displays the scene captured at 17 different exposures for the 45° polarizer orientation.



(a) Single-shot at $t_0 = 0.769$ ms.



(b) Multiple-shots at 45° orientation.

Fig. 1: EdPolCommunity dataset. The region marked in the red box has high polarization.

2. ADDITIONAL COMPARISONS ON THE PFHDRNET VARIANTS

We provide more visual results, as shown in Fig. 2 to compare the PFHDRNet variants. It shows that details are better restored for the PFHDRNet.

3. ADDITIONAL COMPARISONS ON THE STATE-OF-ART

We provide more visual results, as shown in Fig. 3 to compare with state-of-the-art methods. It indicates that our PFHDRNet reconstructs better details.

4. REFERENCES

- [1] Gabriel Eilertsen, Joel Kronander, Gyorgy Denes, Rafal K. Mantiuk, and Jonas Unger, “Hdr image reconstruction from a single exposure using deep cnns,” *ACM Transactions on Graphics*, vol. 36, no. 6, pp. 1–15, Nov 2017.
- [2] Demetris Marnerides, Thomas Bashford-Rogers, Jonathan Hatchett, and Kurt Debattista, “Expandnet: A deep convolutional neural network for high dynamic range expansion from low dynamic range content,” 2019.
- [3] Yuki Endo, Yoshihiro Kanamori, and Jun Mitani, “Deep reverse tone mapping,” *ACM Transactions on Graphics (Proc. of SIGGRAPH ASIA 2017)*, vol. 36, no. 6, Nov. 2017.
- [4] Y. L. Liu, W. S. Lai, Y. S. Chen, Y. L. Kao, M. H. Yang, Y. Y. Chuang, and J. B. Huang, “Single-image hdr reconstruction by learning to reverse the camera pipeline,” in *2020 IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2020, pp. 1648–1657.

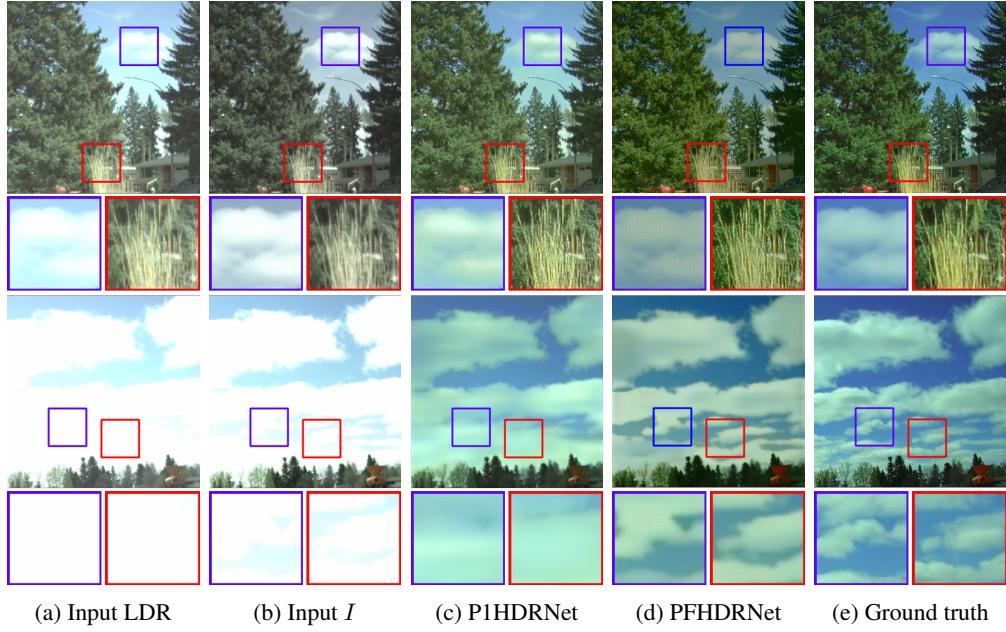


Fig. 2: Qualitative results of PFHDRNet and its variants. Example image from the test dataset where the image details are better restored from left to right. For comparison, the ground truth image is in the last column.

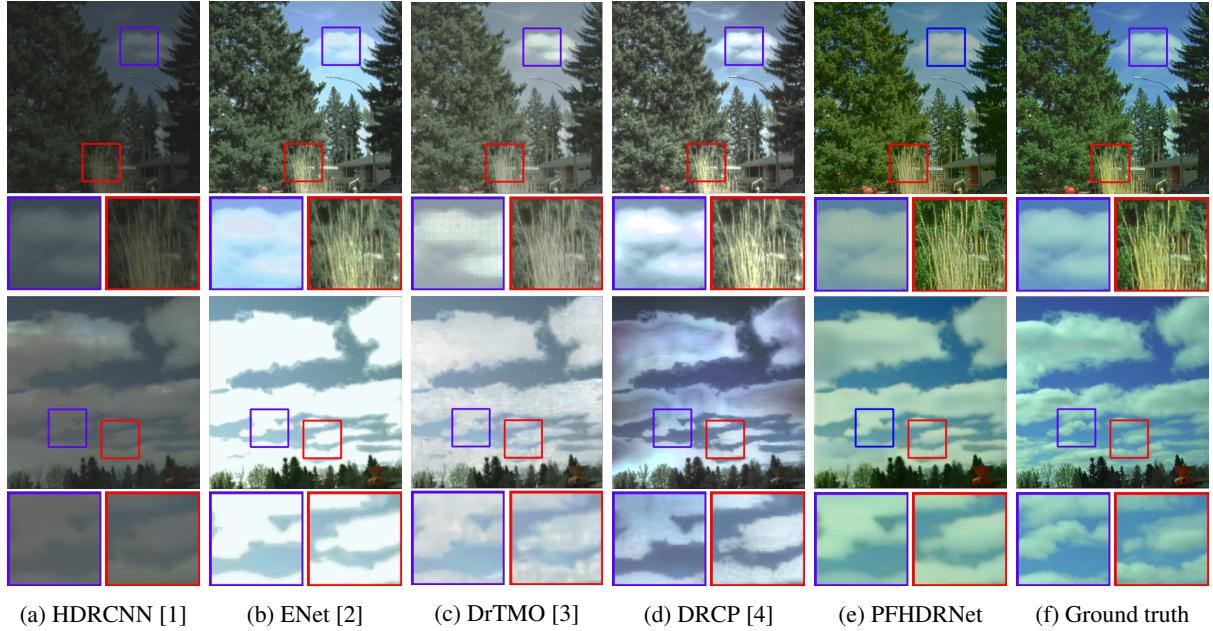


Fig. 3: Qualitative results of state-of-art methods. HDR tone mapped results are shown. Our PFHDRNet recovers the most details, and is closest to the ground truth image.