Learning to Restore Low-Light Images via Decomposition-and-Enhancement (Supplementary Material)

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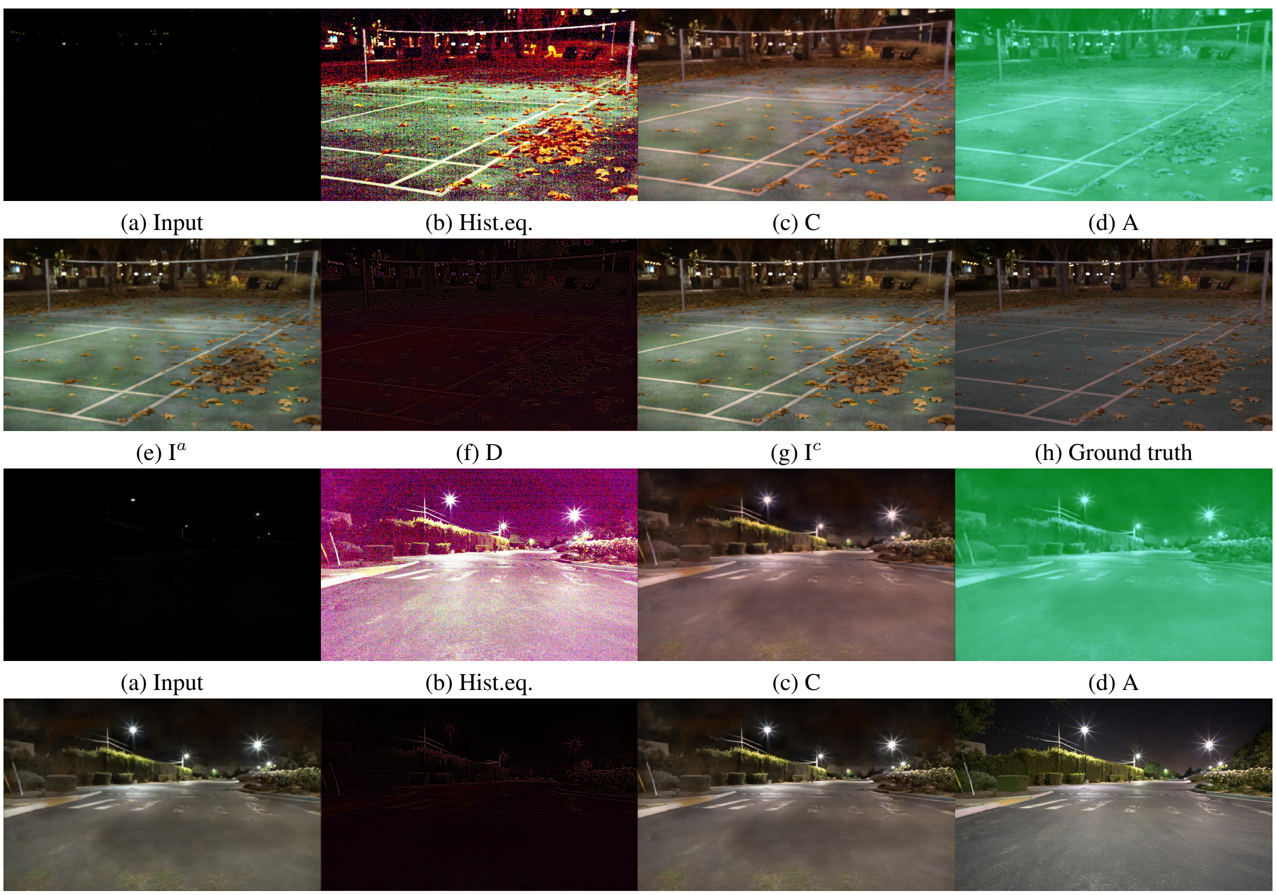
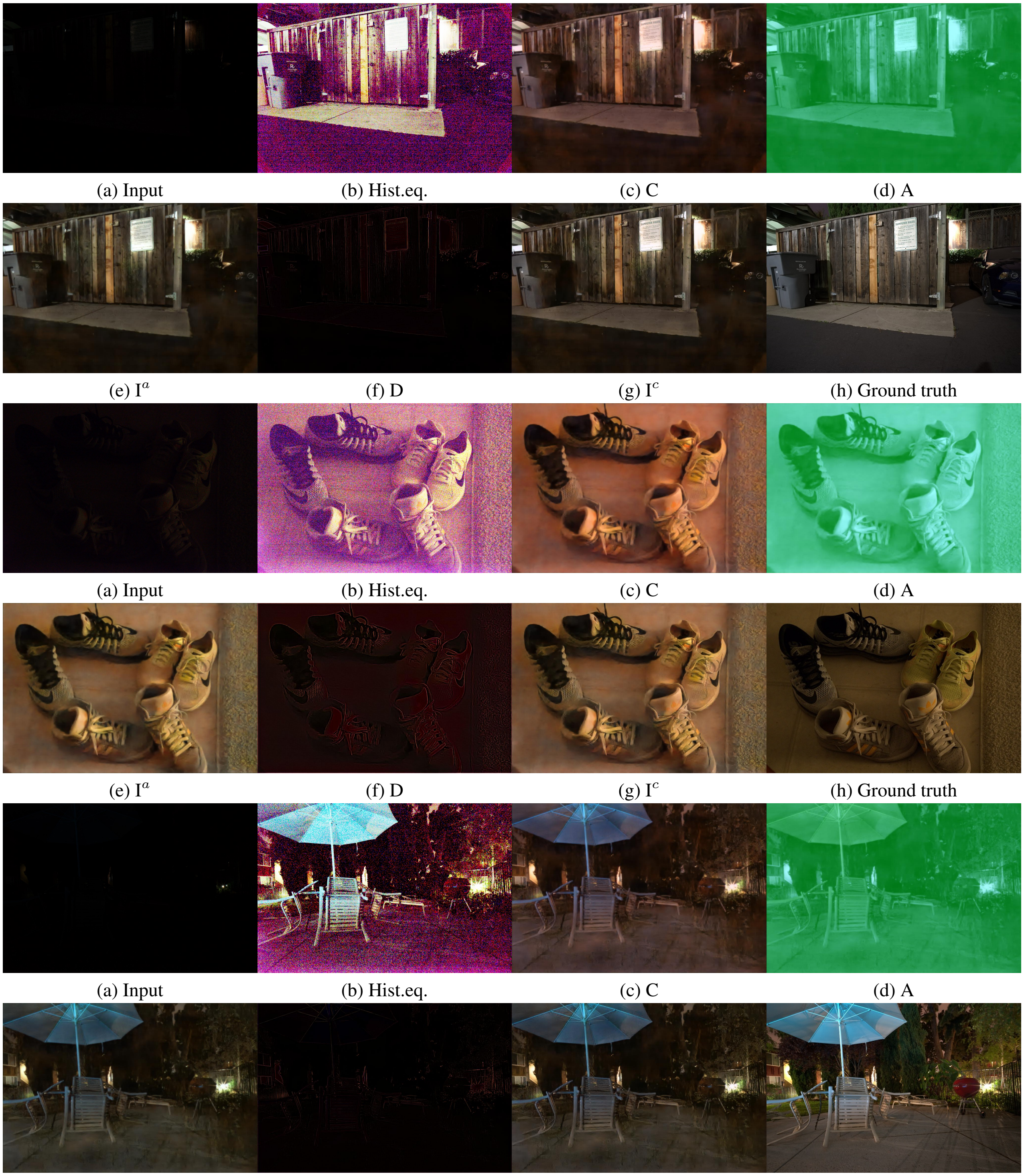
This material first visualizes the internal results of the proposed network in Figure 1 and Figure 2. It then provides visual comparisons between the proposed method and four state-of-the-art low-light image enhancement methods (SID [1], LIME [3], DSLR [4] and DeepUPE [7], which are the top four existing methods according to Table 1 in the paper) in Figure 3, Figure 4 and Figure 5. Finally, we provide visual comparison between our method and different combinations of deep learning based enhancement methods and denoising methods in Figure 6.

† Xin Yang and Rynson Lau are the corresponding authors. Rynson Lau led this project.



(a) Input (b) Hist.eq. (c) C (d) A
(e) I^a (f) D (g) I^c (h) Ground truth
(a) Input (b) Hist.eq. (c) C (d) A
(e) I^a (f) D (g) I^c (h) Ground truth

Figure 1: Visualization of internal results from the proposed network: (a) input image, (b) histogram equalization, (c) predicted content, (d) predicted amplification map, (e) predicted amplified image, (f) predicted detail map, (g) final output, and (h) ground truth.



(a) Input (b) Hist.eq. (c) C (d) A

(e) I^a (f) D (g) I^c (h) Ground truth

(a) Input (b) Hist.eq. (c) C (d) A

(e) I^a (f) D (g) I^c (h) Ground truth

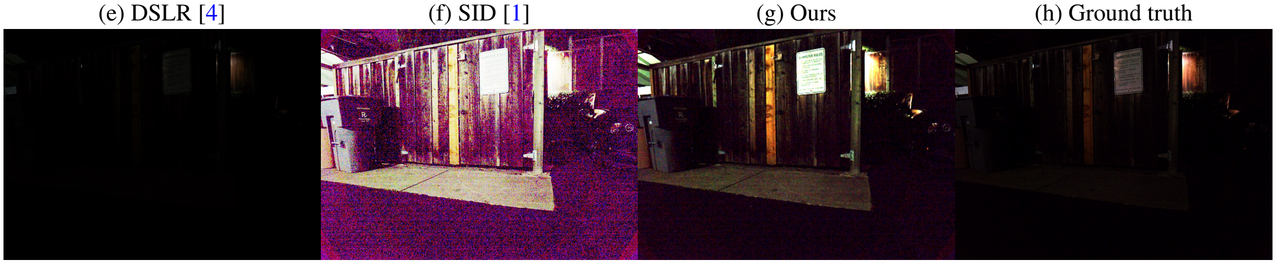
(a) Input (b) Hist.eq. (c) C (d) A

(e) I^a (f) D (g) I^c (h) Ground truth

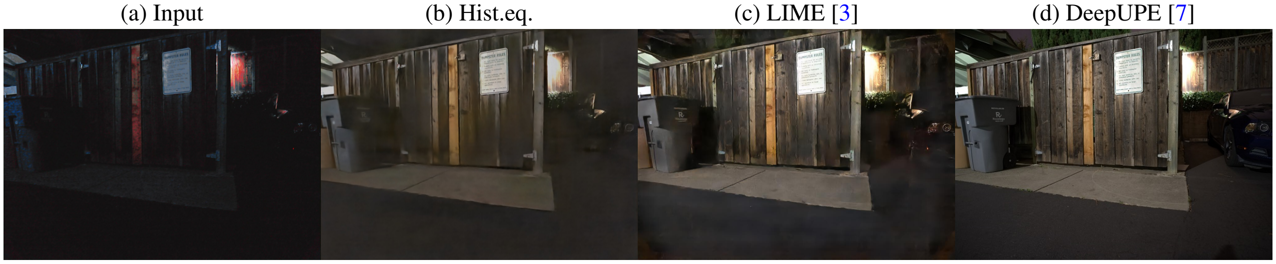
Figure 2: Visualization of internal results from the proposed network: (a) input image, (b) histogram equalization, (c) predicted content, (d) predicted amplification map, (e) predicted amplified image, (f) predicted detail map, (g) final output, and (h) ground truth.

(a) Input (b) Hist.eq. (c) LIME [3] (d) DeepUPE [7]

(e) DSLR [4] (f) SID [1] (g) Ours (h) Ground truth



(a) Input (b) Hist.eq. (c) LIME [3] (d) DeepUPE [7]



(e) DSLR [4] (f) SID [1] (g) Ours (h) Ground truth

(a) Input (b) Hist.eq. (c) LIME [3] (d) DeepUPE [7]

(e) DSLR [4] (f) SID [1] (g) Ours (h) Ground truth

Figure 3: Visual results of state-of-the-art methods and ours on input low-light images from our test set.

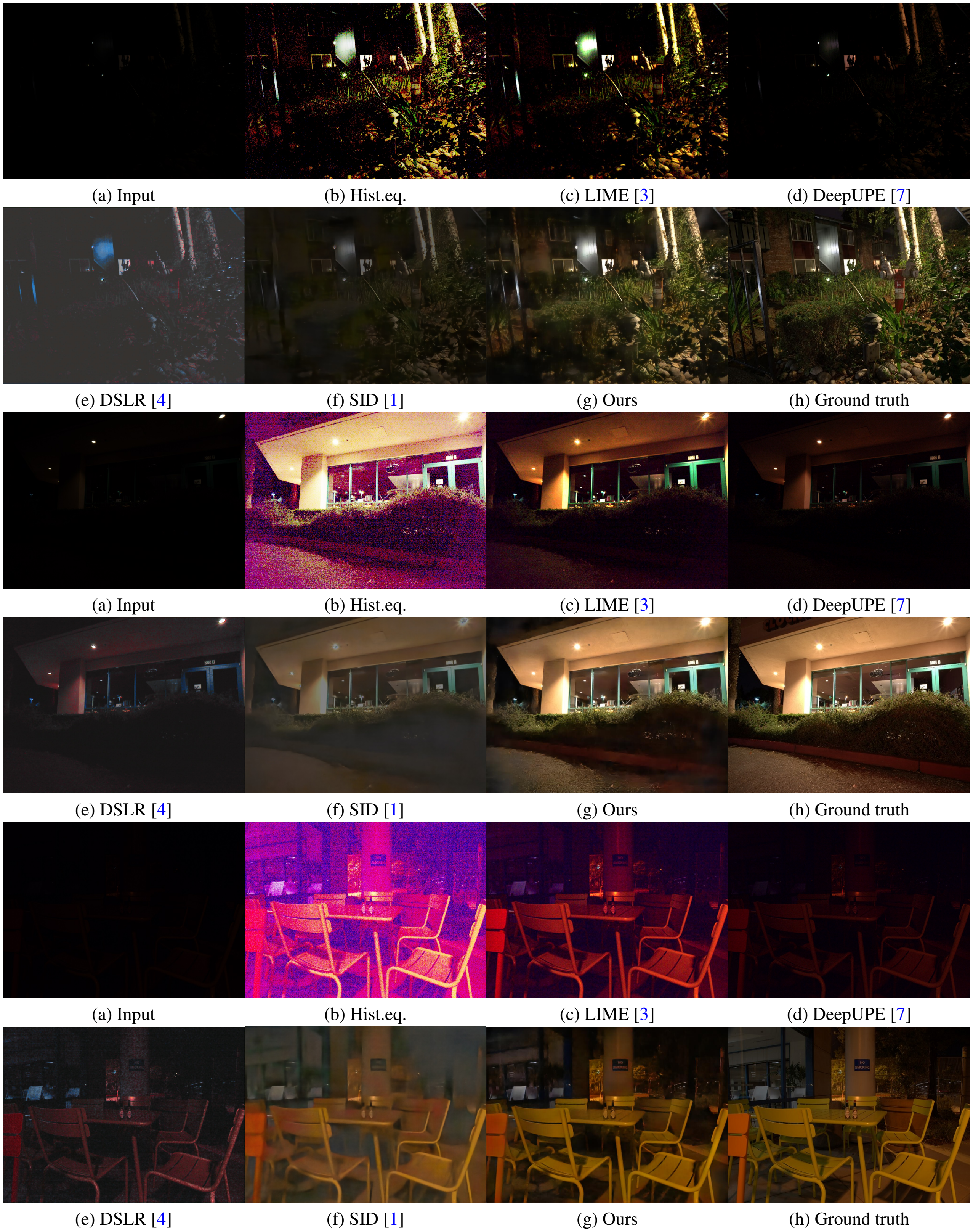
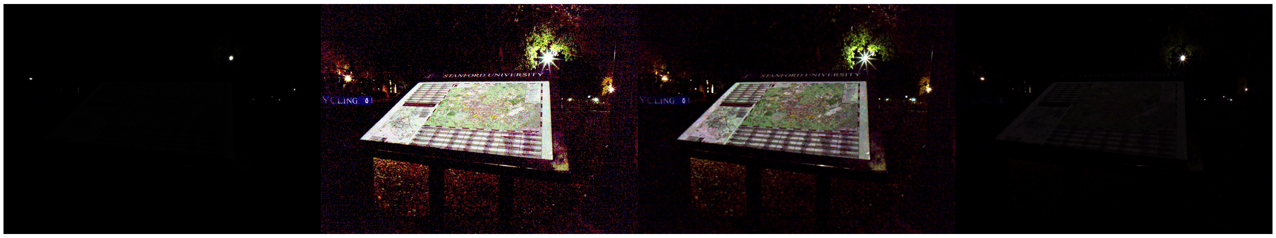
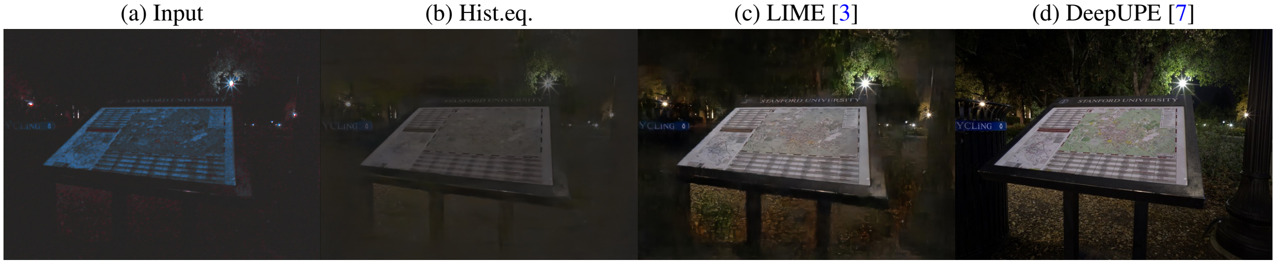


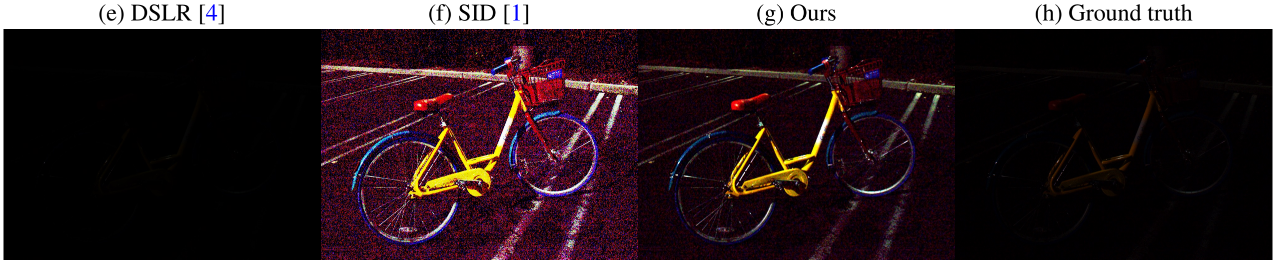
Figure 4: Visual results of state-of-the-art methods and ours on input low-light images from our test set.



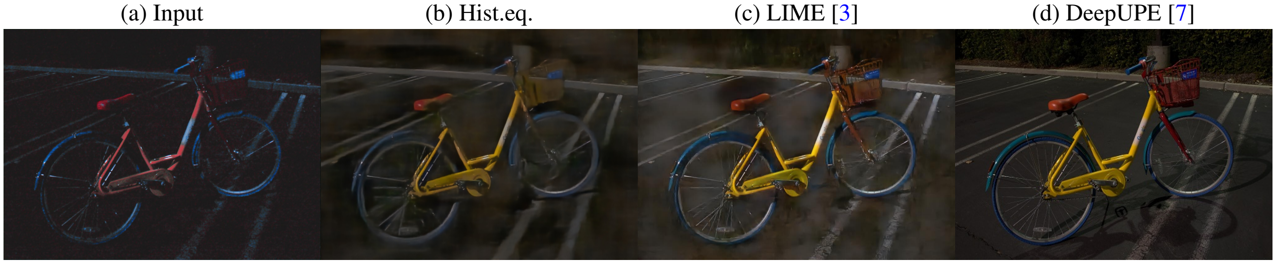
(a) Input (b) Hist.eq. (c) LIME [3] (d) DeepUPE [7]



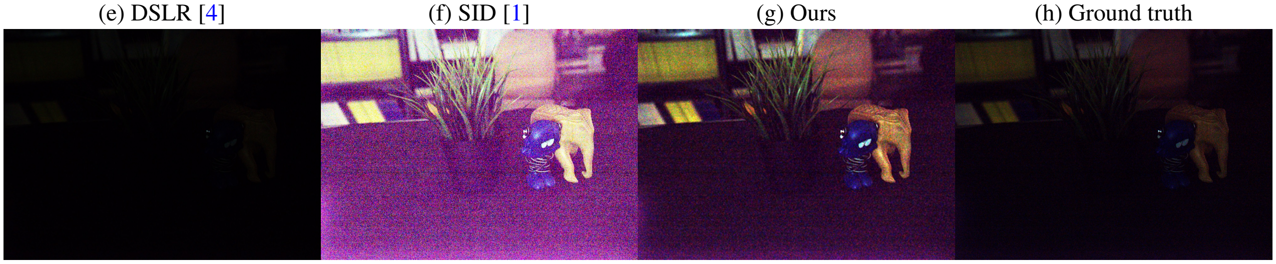
(e) DSLR [4] (f) SID [1] (g) Ours (h) Ground truth



(a) Input (b) Hist.eq. (c) LIME [3] (d) DeepUPE [7]



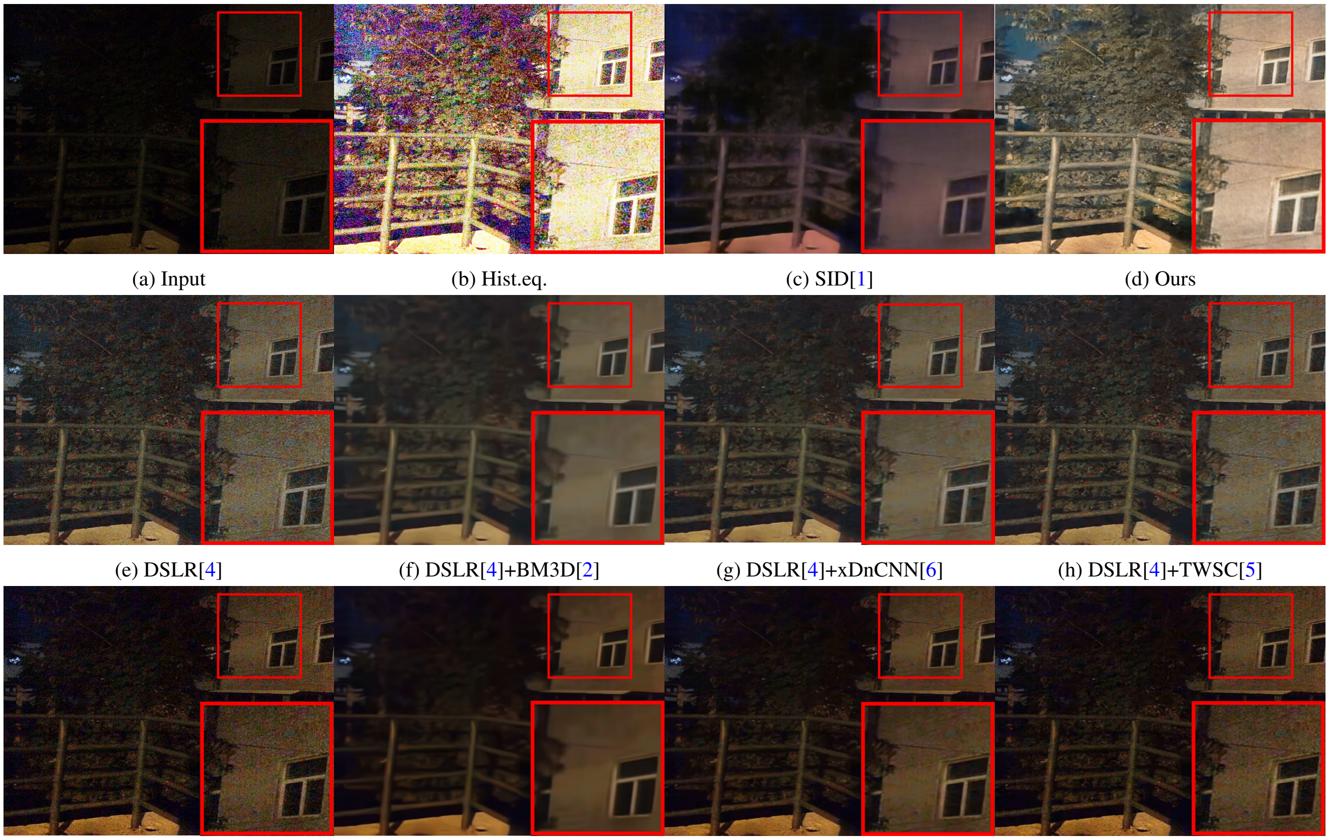
(e) DSLR [4] (f) SID [1] (g) Ours (h) Ground truth



(a) Input (b) Hist.eq. (c) LIME [3] (d) DeepUPE [7]

(e) DSLR [4] (f) SID [1] (g) Ours (h) Ground truth

Figure 5: Visual results of state-of-the-art methods and ours on input low-light images from our test set.



(a) Input (b) Hist.eq. (c) SID[1] (d) Ours

(e) DSLR[4] (f) DSLR[4]+BM3D[2] (g) DSLR[4]+xDnCNN[6] (h) DSLR[4]+TWSC[5]

(i) DeepUPE[7] (j) DeepUPE[7]+BM3D[2] (k) DeepUPE[7]+xDnCNN[6] (l) DeepUPE[7]+TWSC[5]

Figure 6: Comparison to different combinations of deep learning based enhancement methods (DeepUPE[7] and DSLR[4]) and denoising methods (BM3D[2], xDnCNN[6] and TWSC[5]).

References

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