

Supplementary materials to “Joint Convolutional Analysis and Synthesis Sparse Representation for Single Image Layer Separation”

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In the main paper, we have compared the proposed JCAS model with state-of-the-art algorithms on different applications. On each application, one or two visual examples have been given to show the effectiveness of the proposed JCAS model. In this supplementary, we present more visual comparisons on these applications:

- Rain streak removal
- HDR tone mapping
- Texture-cartoon decomposition
- Contrast enhancement

1. More Results on Rain Streak Removal

In Figures 1-6, we present more visual comparisons results on rain streak removal. Specifically, Figures 1-4 are the comparison results on synthetic data, and Figures 5 and 6 are the comparison results on real data.

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(a) Input



(b) Groundtruth



(c) ASR



(d) Kang's method [22]



(e) LRA [9]



(f) DSC [28]



(g) LP [27]



(h) JCAS

Figure 1. Rain streak removal results by the competing methods.



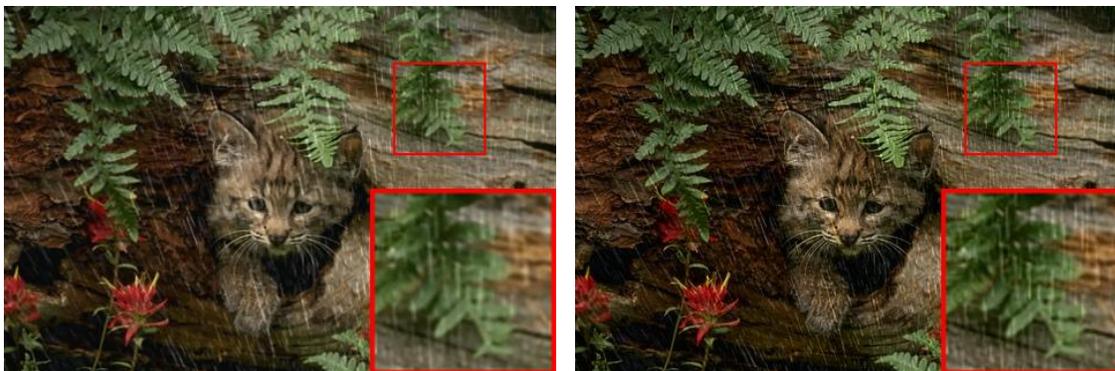
(a) Input

(b) Groundtruth



(c) ASR

(d) Kang's method [20]



(e) LRA [8]

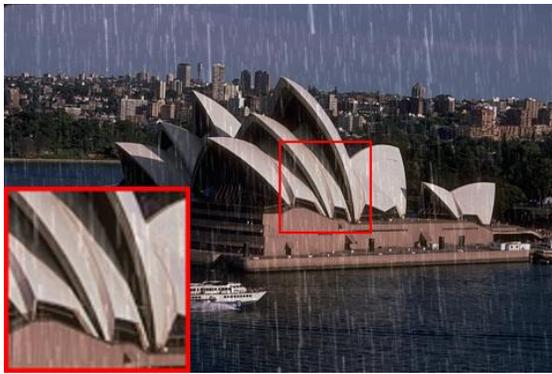
(f) DSC [26]



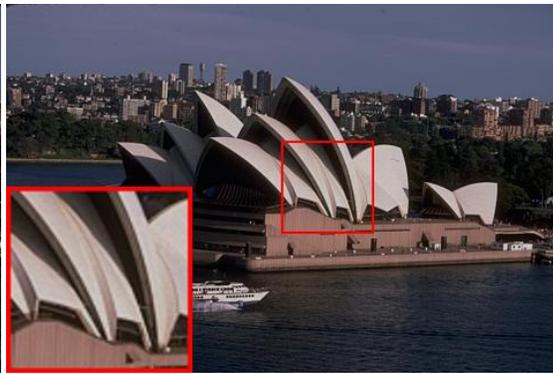
(g) LP [25]

(h) JCAS

Figure 2. Rain streak removal results by the competing methods.



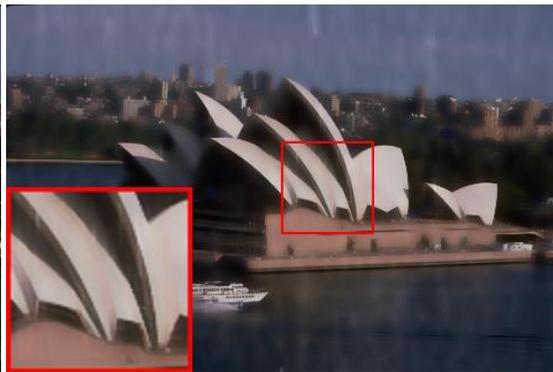
(a) Input



(b) Groundtruth



(c) ASR



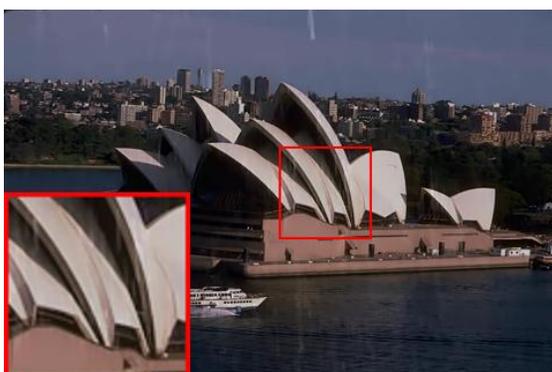
(d) Kang's method [20]



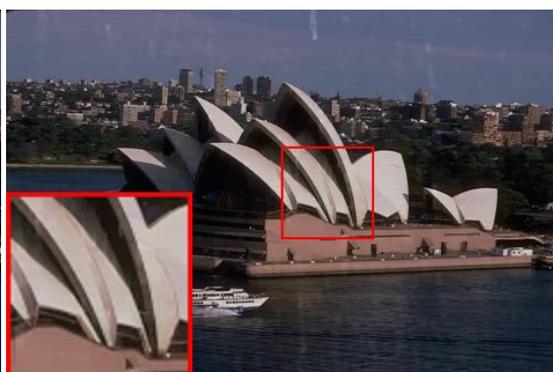
(e) LRA [8]



(f) DSC [26]



(g) LP [25]



(h) JCAS

Figure 3. Rain streak removal results by the competing methods.



(a) Input



(b) Groundtruth



(c) ASR



(d) Kang's method [20]



(e) LRA [8]



(f) DSC [26]



(g) LP [25]



(h) JCAS

Figure 4. Rain streak removal results by the competing methods.



(a) Input



(b) Kang's method [20]



(c) LRA [8]



(d) DSC [26]



(e) LP [25]



(f) JCAS

Figure 5. Visual comparison of the competing rain streak removal algorithms on a real rainy image.



(a) Input



(d) Kang's method [20]



(e) LRA [8]



(f) DSC [26]



(g) LP [25]

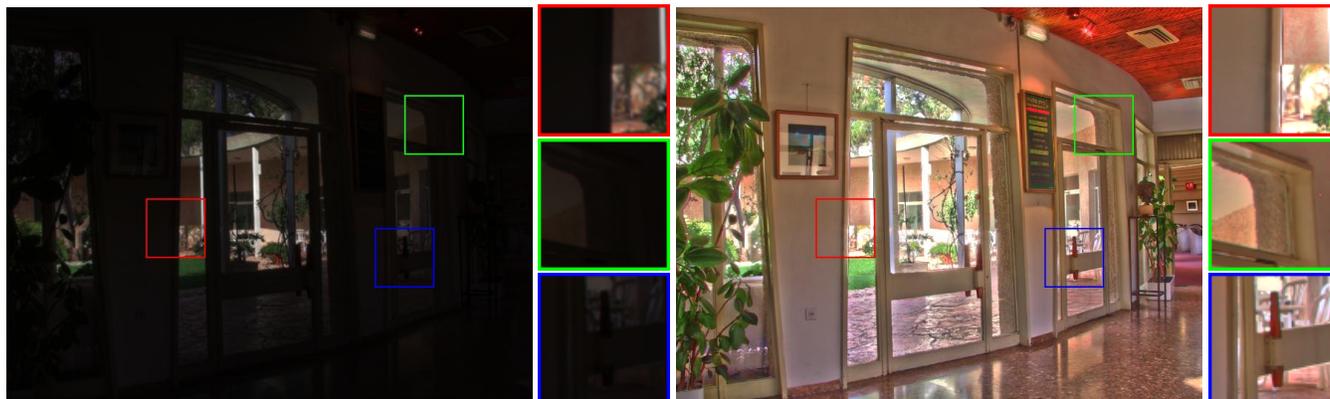


(h) JCAS

Figure 6. Visual comparison of the competing rain streak removal algorithms on a real rainy image.

2. More Results on HDR Tone Mapping

In Figures 7-10, we present more visual comparisons results on HDR tone mapping.



Result by [12]

Result by [9]



Result by [11]

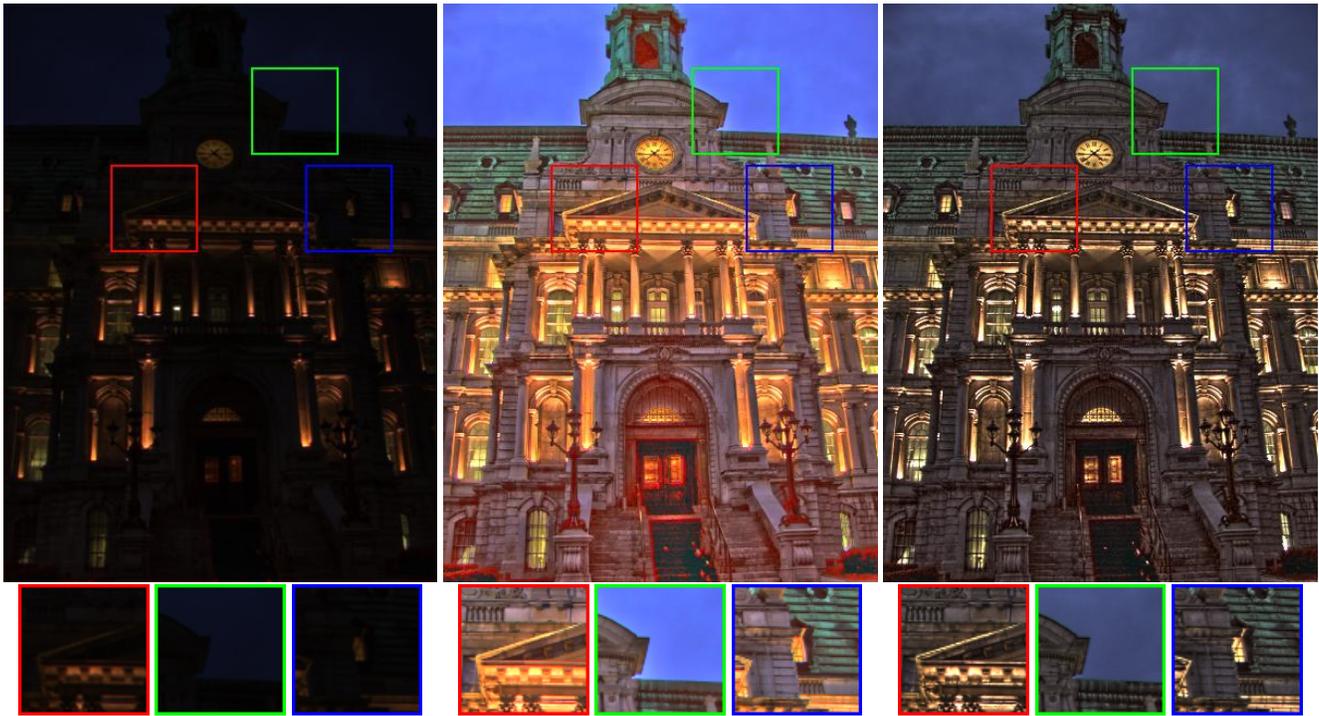
Result by [33]



Result by [15]

JCAS

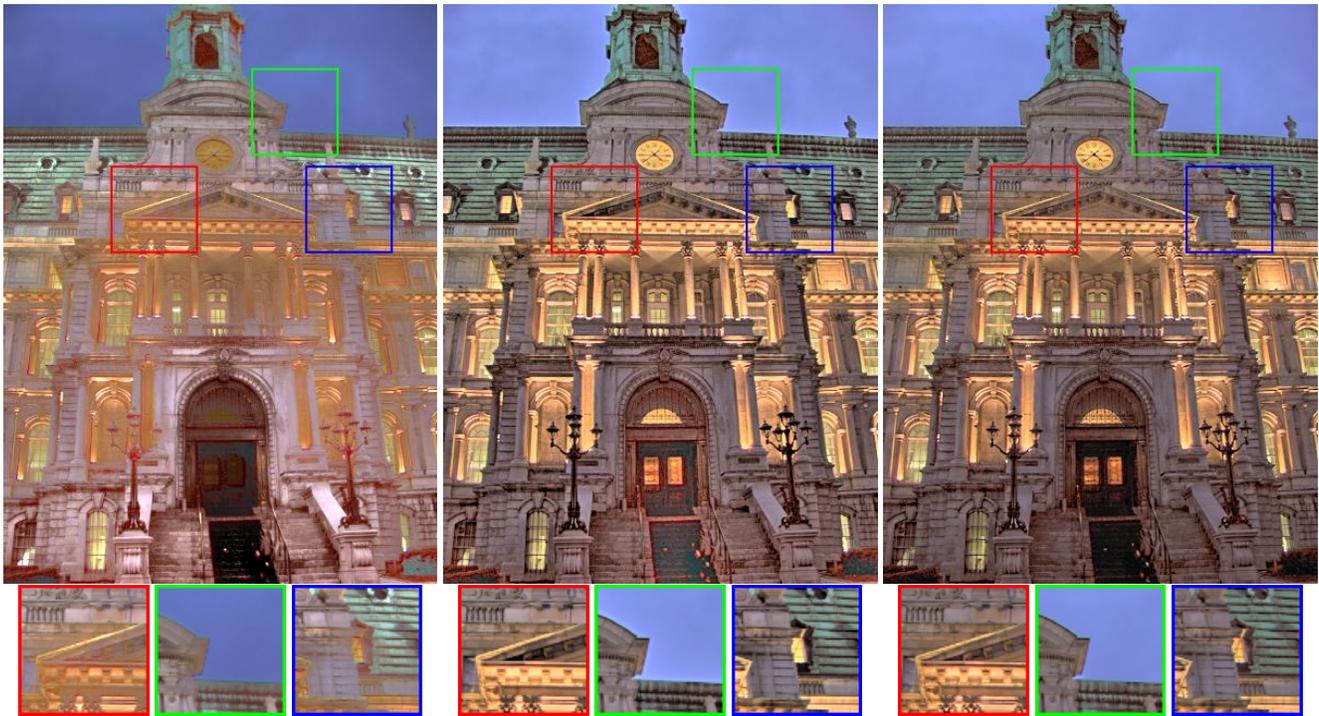
Figure 7. Tone mapping results by the competing methods.



Result by [12]

Result by [9]

Result by [11]



Result by [33]

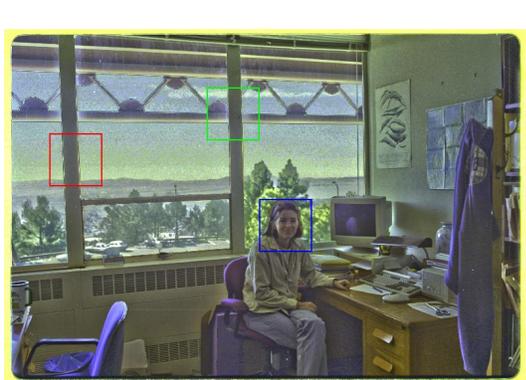
Result by [15]

JCAS

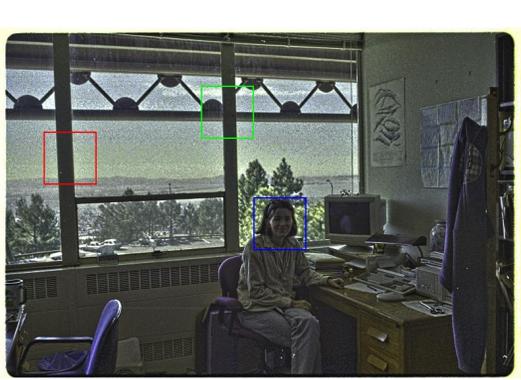
Figure 8. Tone mapping results by the competing methods.



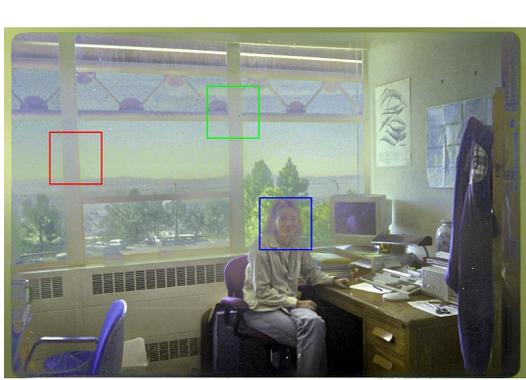
Result by [12]



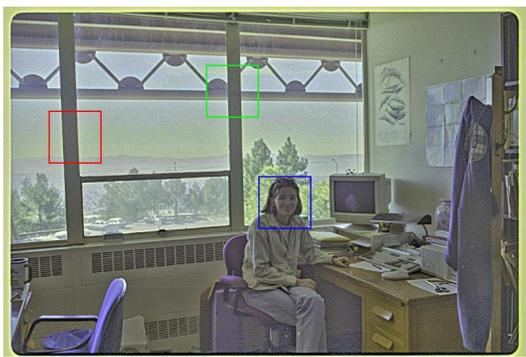
Result by [9]



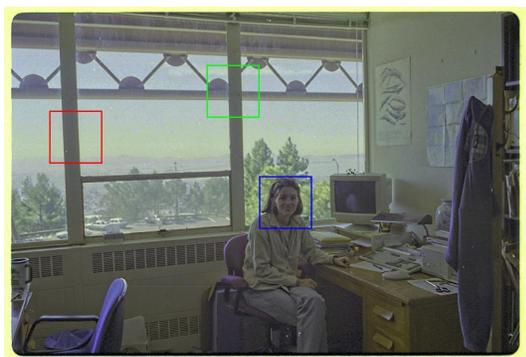
Result by [11]



Result by [33]



Result by [15]



JCAS

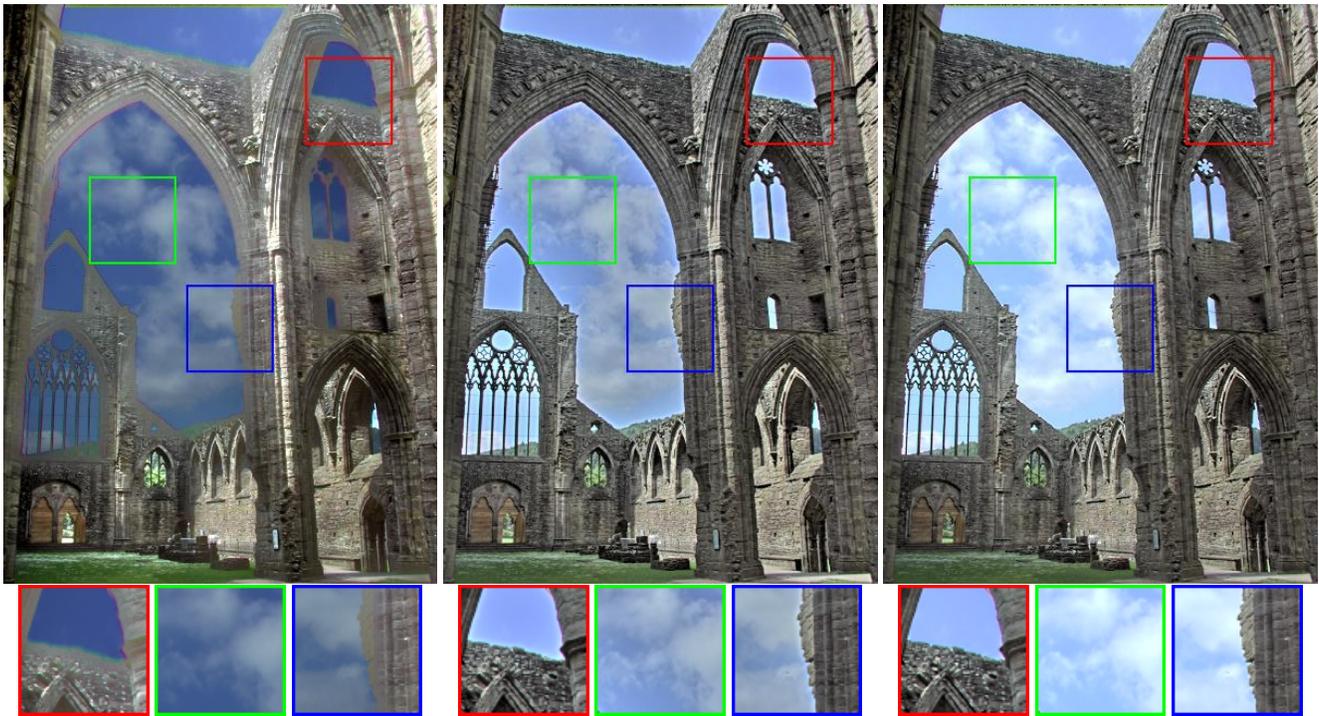
Figure 9. Tone mapping results by the competing methods.



Result by [12]

Result by [9]

Result by [11]



Result by [33]

Result by [15]

JCAS

Figure 10. Tone mapping results by the competing methods.

3. More Results on Texture-Cartoon Decomposition

In Figures 11-13, we present more visual comparisons results on texture-cartoon decomposition.

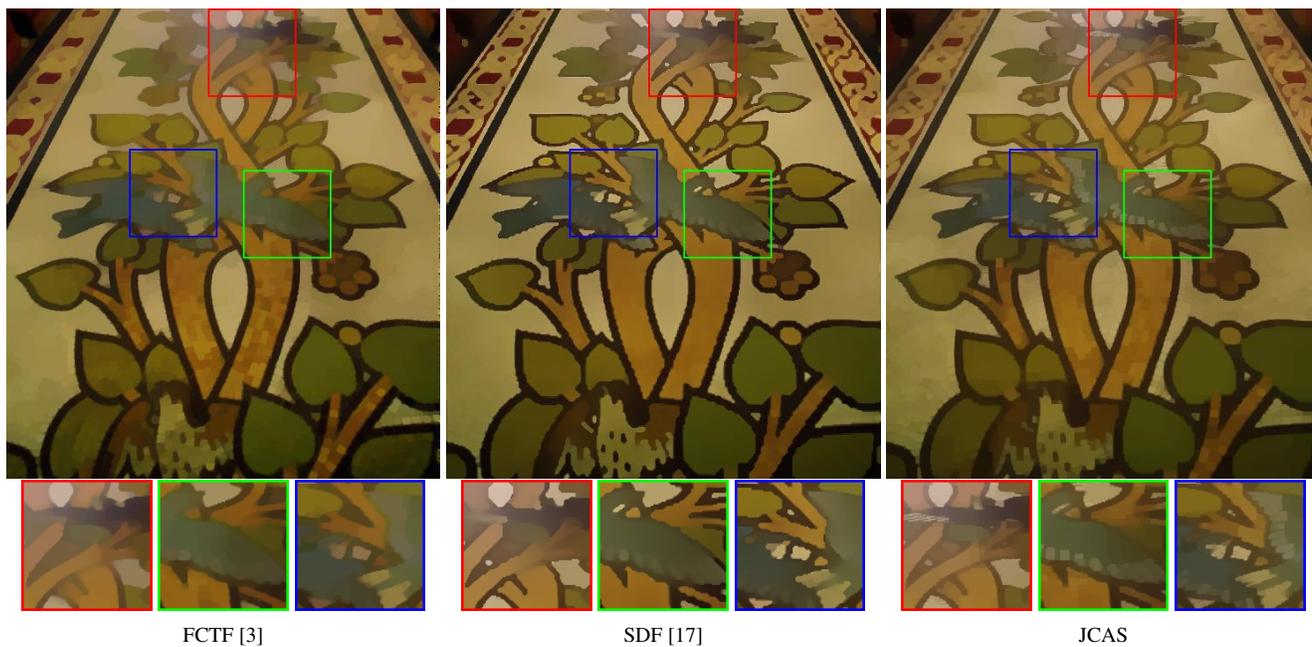


Figure 11. The texture removal results by the competing methods.

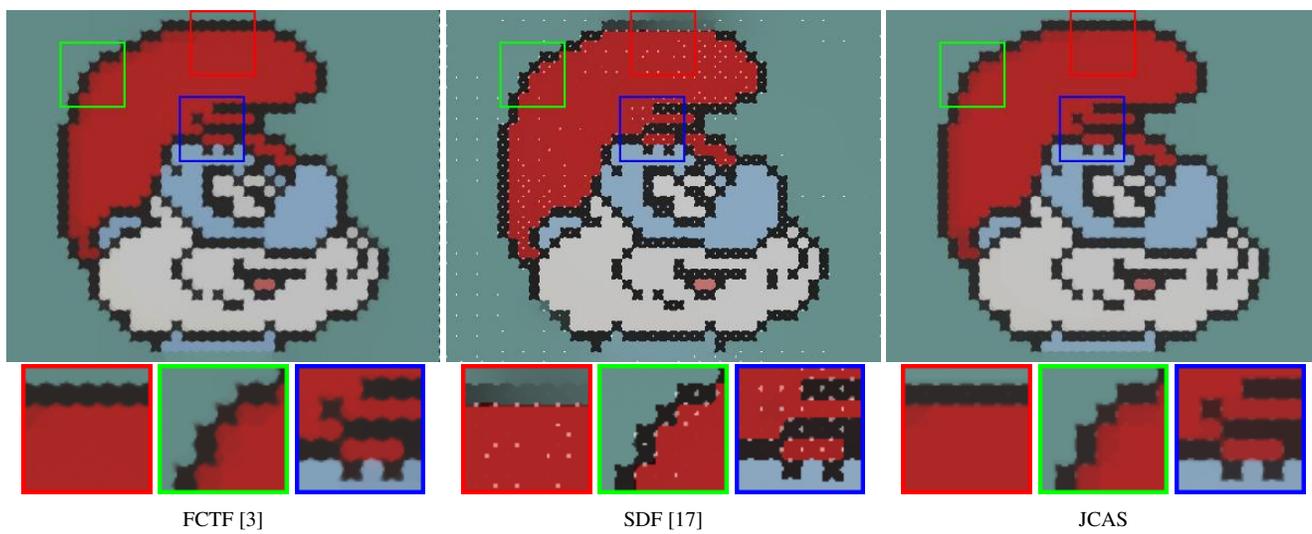
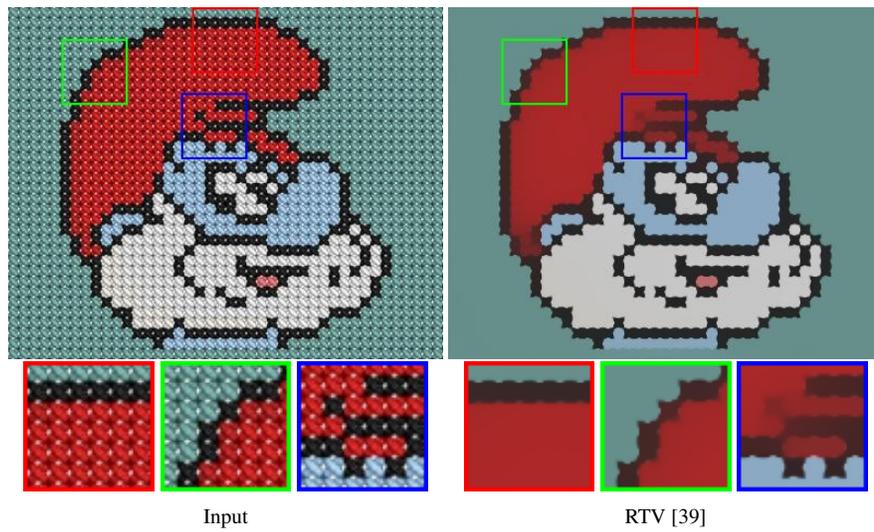


Figure 12. The texture removal results by the competing methods.

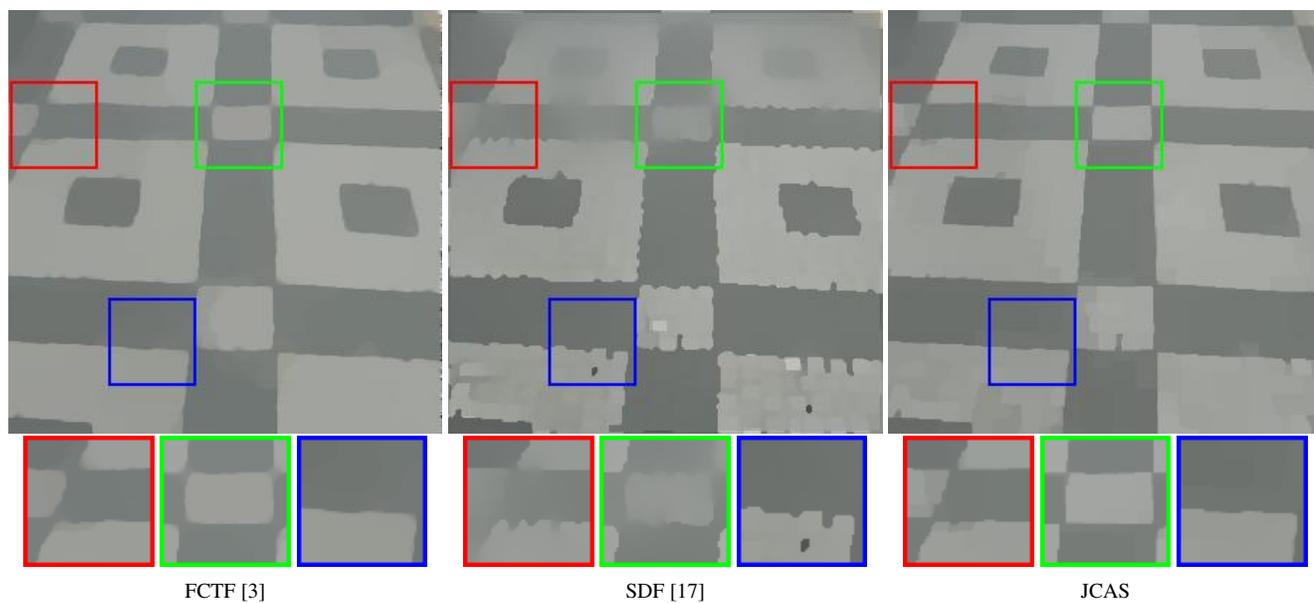
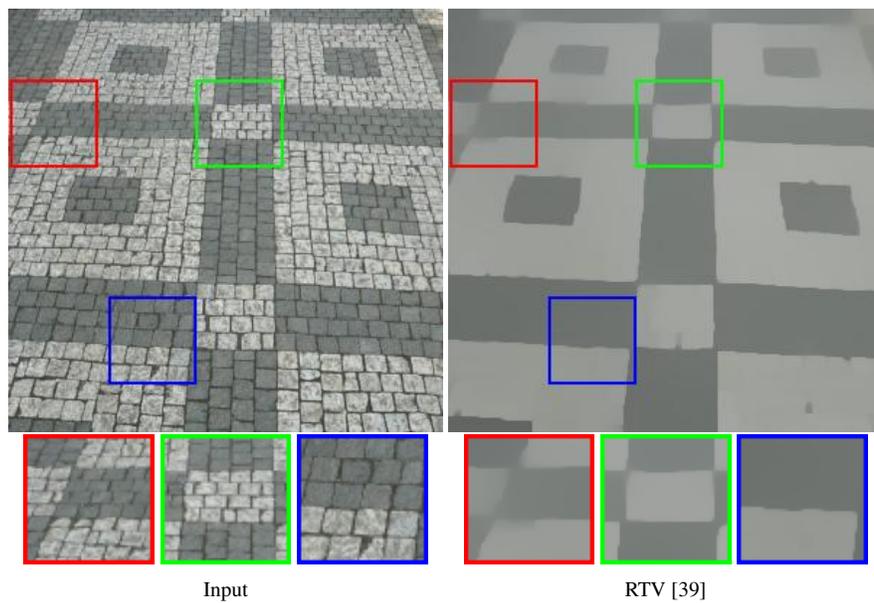


Figure 13. The texture removal results by the competing methods.

4. More Results on Contrast Enhancement

In Figures 14-16, we provide more contrast enhancement results by the competing methods.



Input



NEPA [36]



PMSIR [13]

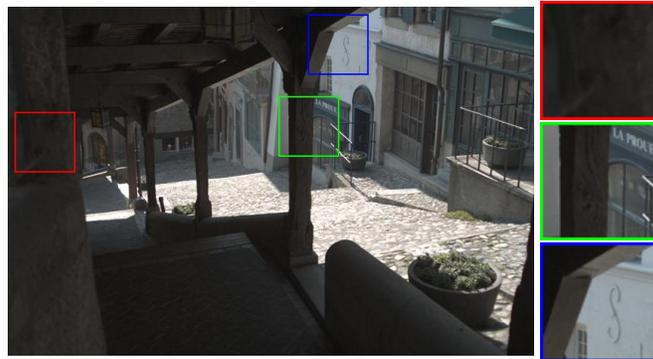


WVRI [14]

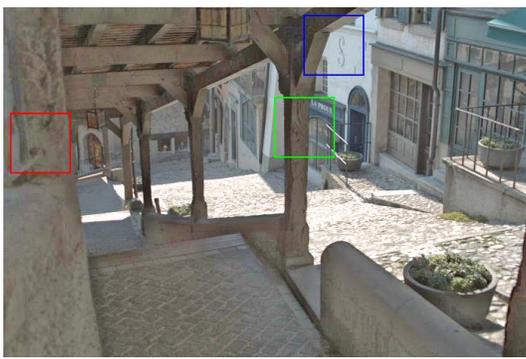


JCAS

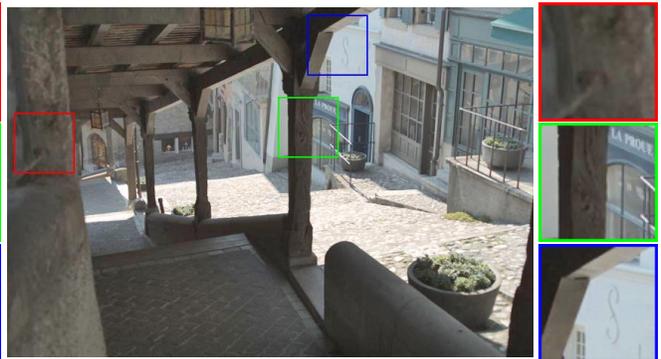
Figure 14. Tone mapping results by the competing methods.



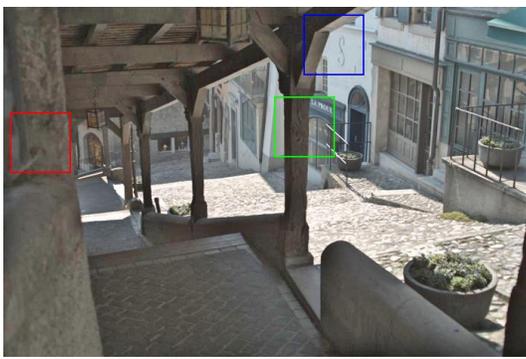
Input



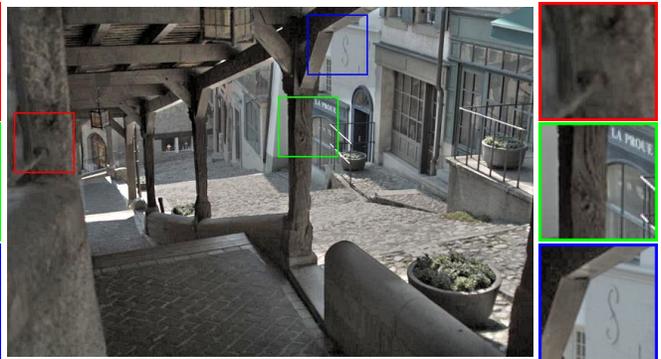
NEPA [36]



PMSIR [13]



WVRI [14]



JCAS

Figure 15. Tone mapping results by the competing methods.



Input



NEPA [36]



PMSIR [13]



WVRI [14]



JCAS



Figure 16. Tone mapping results by the competing methods.