

Supplementary Material: Deblurring Low-Light Images with Events

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8 Additional results on synthetic data

In this section, we provide additional qualitative comparisons on synthetic data among four state-of-the-art event-based deblurring methods including (Pan et al, 2019; Lin et al, 2020; Xu et al, 2021) and our preliminary work (Zhou et al, 2021), and four state-of-the-art image-based deblurring methods including (Hu et al, 2018; Zhang et al, 2019; Ren et al, 2020; Cho et al, 2021), as shown in Fig. 7, Fig. 8, and Fig. 9, corresponding to Footnote 2 in Section 6.1 of the paper.

9 Additional results on real data captured by an event camera

In this section, we provide additional qualitative comparisons on real data captured by an event camera (DAVIS346) among four state-of-the-art event-based deblurring methods including (Pan et al, 2019; Lin et al, 2020; Xu et al, 2021) and our preliminary work (Zhou et al, 2021), and four state-of-the-art image-based deblurring methods including (Hu et al, 2018; Zhang et al, 2019; Ren et al, 2020; Cho et al, 2021), as shown

in Fig. 10, Fig. 11, and Fig. 12, corresponding to Footnote 3 in Section 6.3 of the paper.

10 Additional results on real data captured by a hybrid camera

In this section, we provide additional qualitative comparisons on real data captured by our RGB-DAVIS hybrid camera system among our preliminary work (Zhou et al, 2021) and four image-based deblurring methods (Hu et al, 2018; Zhang et al, 2019; Ren et al, 2020; Cho et al, 2021), as shown in Fig. 13, corresponding to Footnote 4 in Section 6.4 of the paper.

References

- Cho SJ, Ji SW, Hong JP, Jung SW, Ko SJ (2021) Rethinking coarse-to-fine approach in single image deblurring. In: Proc. of International Conference on Computer Vision, pp 4641–4650
- Hu Z, Cho S, Wang J, Yang MH (2018) Deblurring low-light images with light streaks. *IEEE Transactions on Pattern Analysis and Machine Intelligence* 40(10):2329–2341
- Lin S, Zhang J, Pan J, Jiang Z, Zou D, Wang Y, Chen J, Ren J (2020) Learning event-driven video deblurring and interpolation. In: Proc. of European Conference on Computer Vision
- Pan L, Scheerlinck C, Yu X, Hartley R, Liu M, Dai Y (2019) Bringing a blurry frame alive at high frame-rate with an event camera. In: Proc. of Computer Vision and Pattern Recognition, pp 6820–6829
- Ren D, Zhang K, Wang Q, Hu Q, Zuo W (2020) Neural blind deconvolution using deep priors. In: Proc. of Computer Vision and Pattern Recognition, pp 3341–3350
- Xu F, Yu L, Wang B, Yang W, Xia GS, Jia X, Qiao Z, Liu J (2021) Motion deblurring with real events. In: Proc. of International Conference on Computer Vision, pp 2583–2592
- Zhang H, Dai Y, Li H, Koniusz P (2019) Deep stacked hierarchical multi-patch network for image deblurring. In: Proc. of Computer Vision and Pattern Recognition, pp 5978–5986
- Zhou C, Teng M, Han J, Xu C, Shi B (2021) DeLiEve-Net: Deblurring low-light images with light streaks and local events. In: Proc. of International Conference on Computer Vision Workshops, pp 1155–1164

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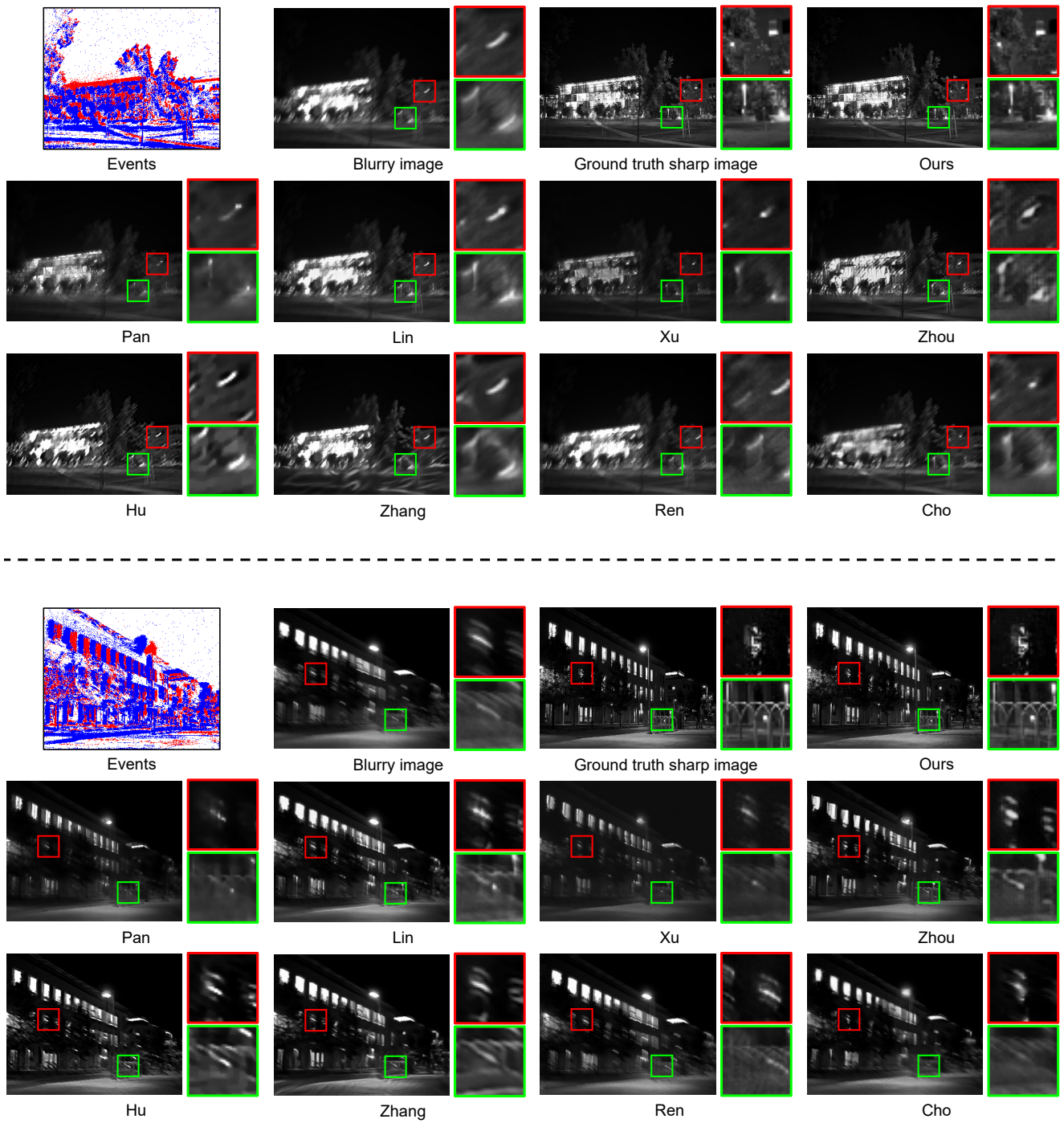


Fig. 7 Additional qualitative comparisons on synthetic data among our method, four event-based deblurring methods (Pan et al, 2019; Lin et al, 2020; Xu et al, 2021; Zhou et al, 2021), and four image-based deblurring methods (Hu et al, 2018; Zhang et al, 2019; Ren et al, 2020; Cho et al, 2021) (part 1).

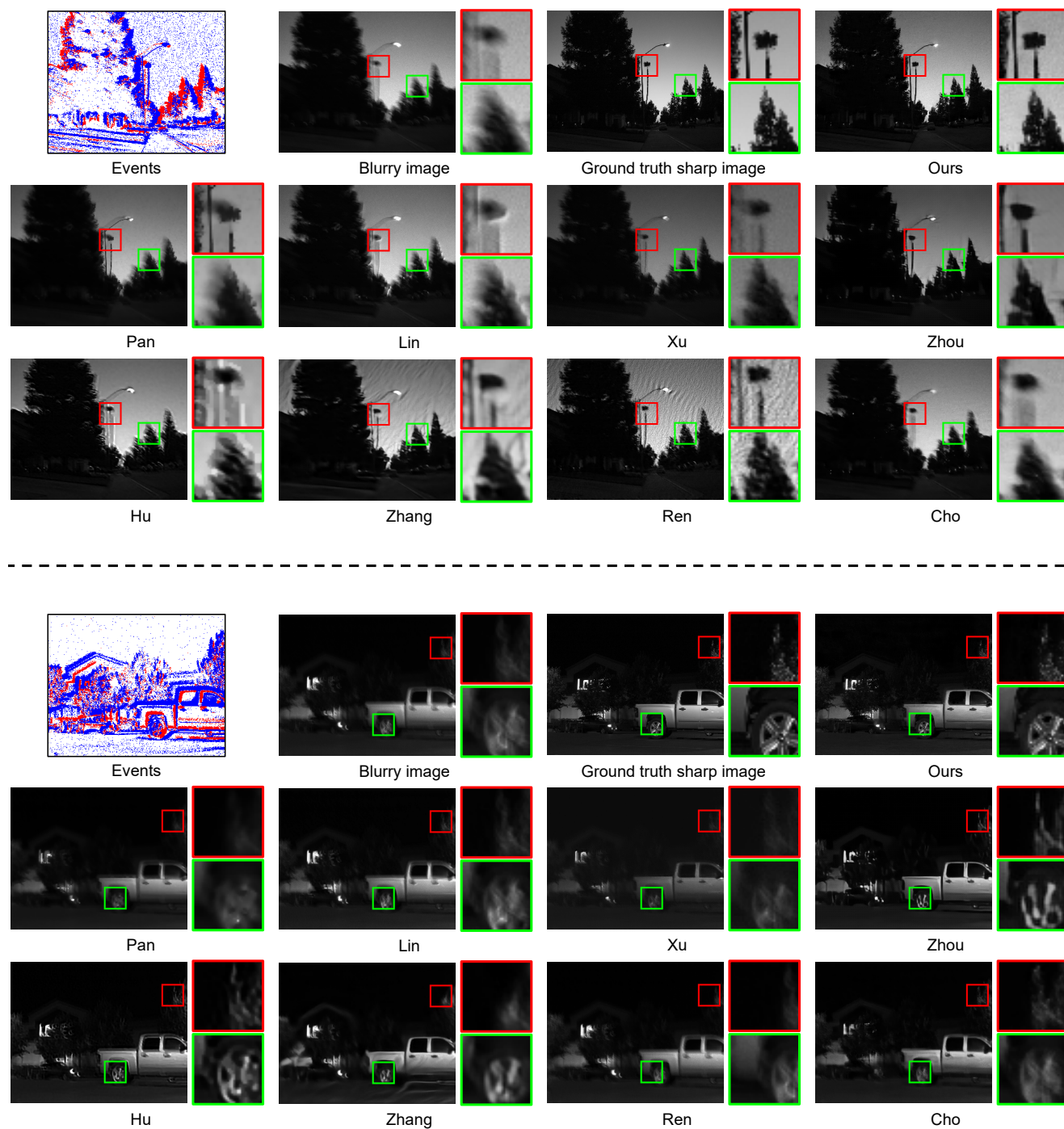


Fig. 8 Additional qualitative comparisons on synthetic data among our method, four event-based deblurring methods (Pan et al, 2019; Lin et al, 2020; Xu et al, 2021; Zhou et al, 2021), and four image-based deblurring methods (Hu et al, 2018; Zhang et al, 2019; Ren et al, 2020; Cho et al, 2021) (part 2).

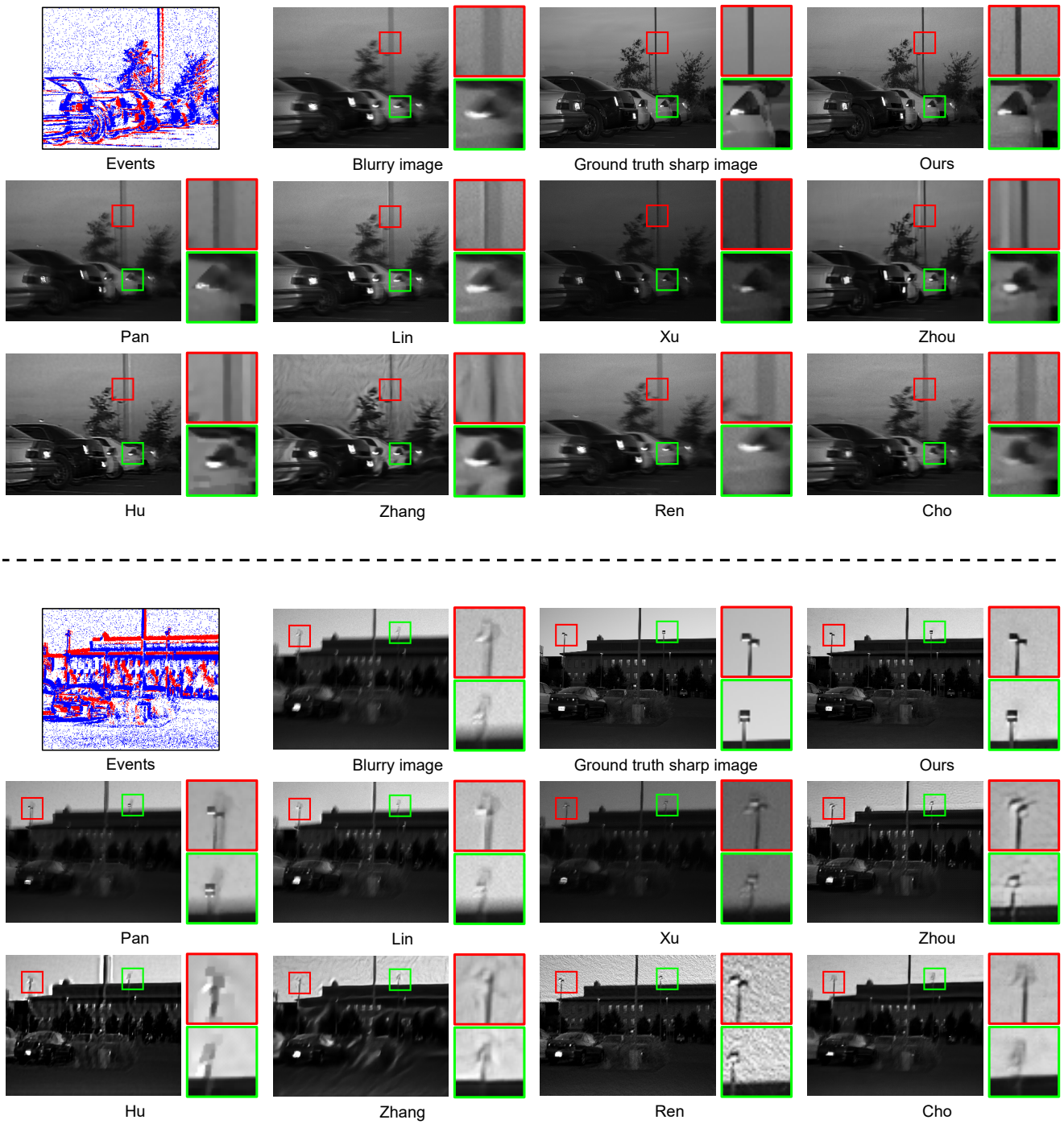


Fig. 9 Additional qualitative comparisons on synthetic data among our method, four event-based deblurring methods (Pan et al, 2019; Lin et al, 2020; Xu et al, 2021; Zhou et al, 2021), and four image-based deblurring methods (Hu et al, 2018; Zhang et al, 2019; Ren et al, 2020; Cho et al, 2021) (part 3).

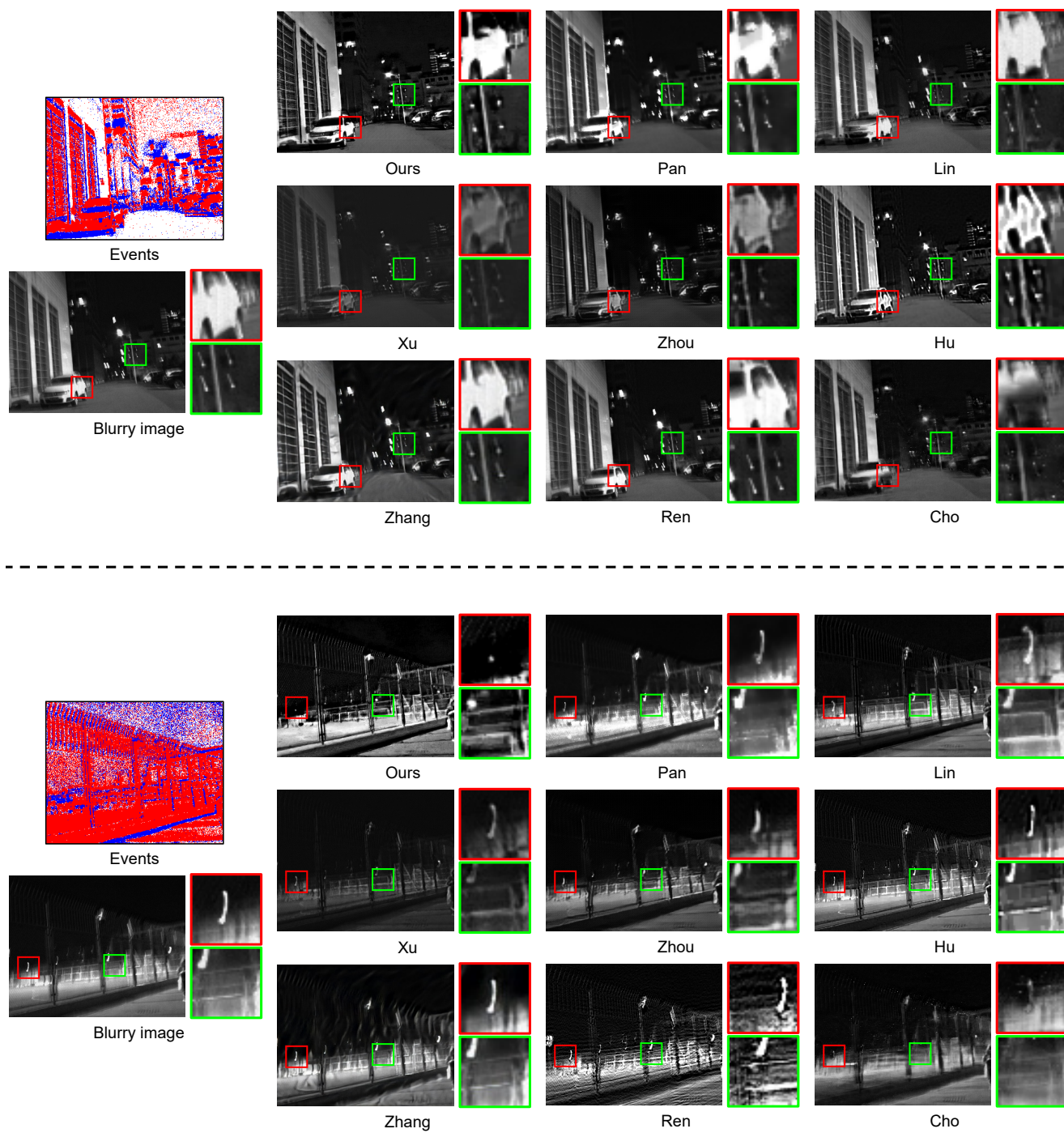


Fig. 10 Additional qualitative comparisons on real data captured by an event camera among our method, four event-based deblurring methods (Pan et al, 2019; Lin et al, 2020; Xu et al, 2021; Zhou et al, 2021), and four image-based deblurring methods (Hu et al, 2018; Zhang et al, 2019; Ren et al, 2020; Cho et al, 2021) (part 1).

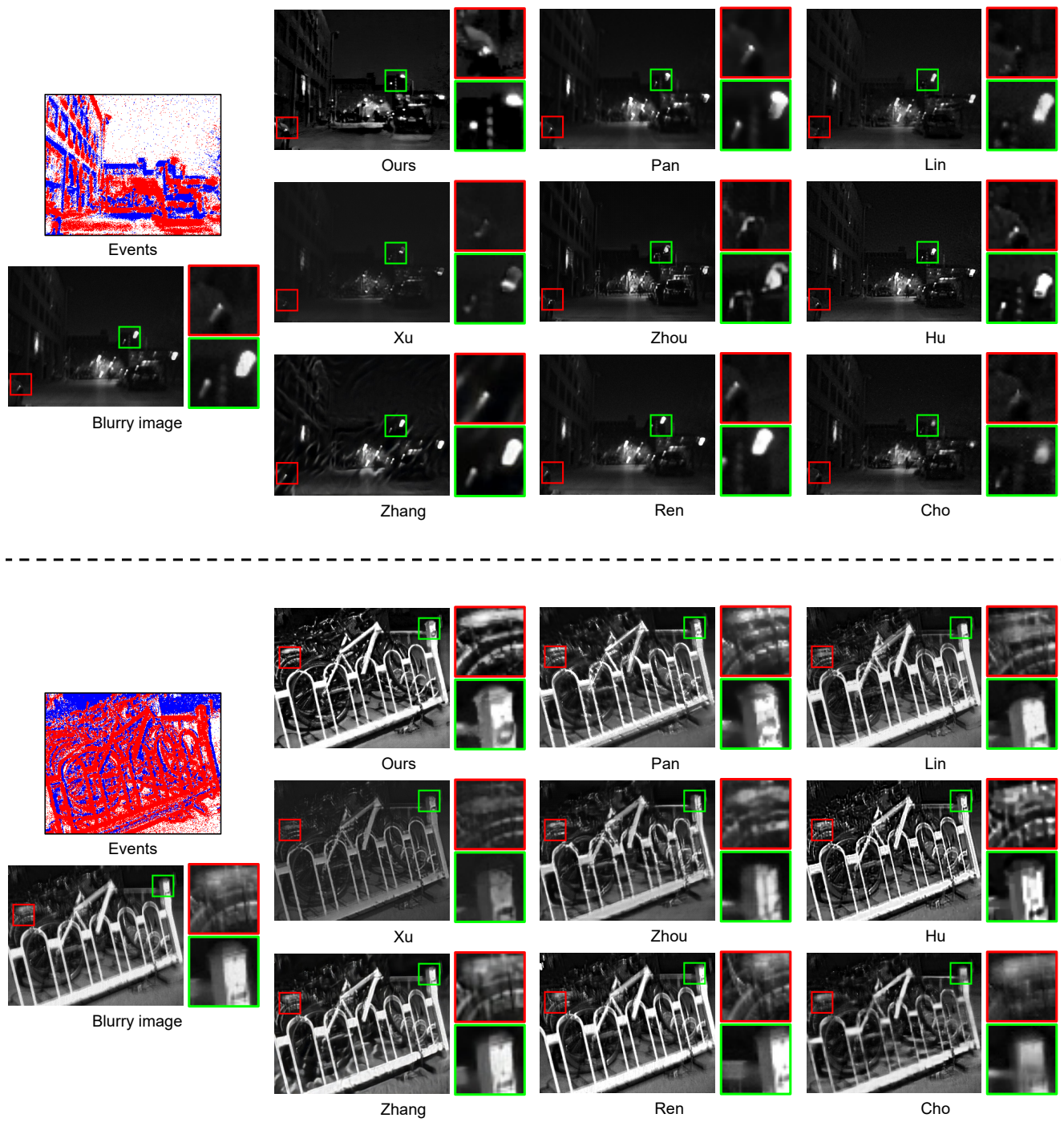


Fig. 11 Additional qualitative comparisons on real data captured by an event camera among our method, four event-based deblurring methods (Pan et al, 2019; Lin et al, 2020; Xu et al, 2021; Zhou et al, 2021), and four image-based deblurring methods (Hu et al, 2018; Zhang et al, 2019; Ren et al, 2020; Cho et al, 2021) (part 2).



Fig. 12 Additional qualitative comparisons on real data captured by an event camera among our method, four event-based deblurring methods (Pan et al, 2019; Lin et al, 2020; Xu et al, 2021; Zhou et al, 2021), and four image-based deblurring methods (Hu et al, 2018; Zhang et al, 2019; Ren et al, 2020; Cho et al, 2021) (part 3).

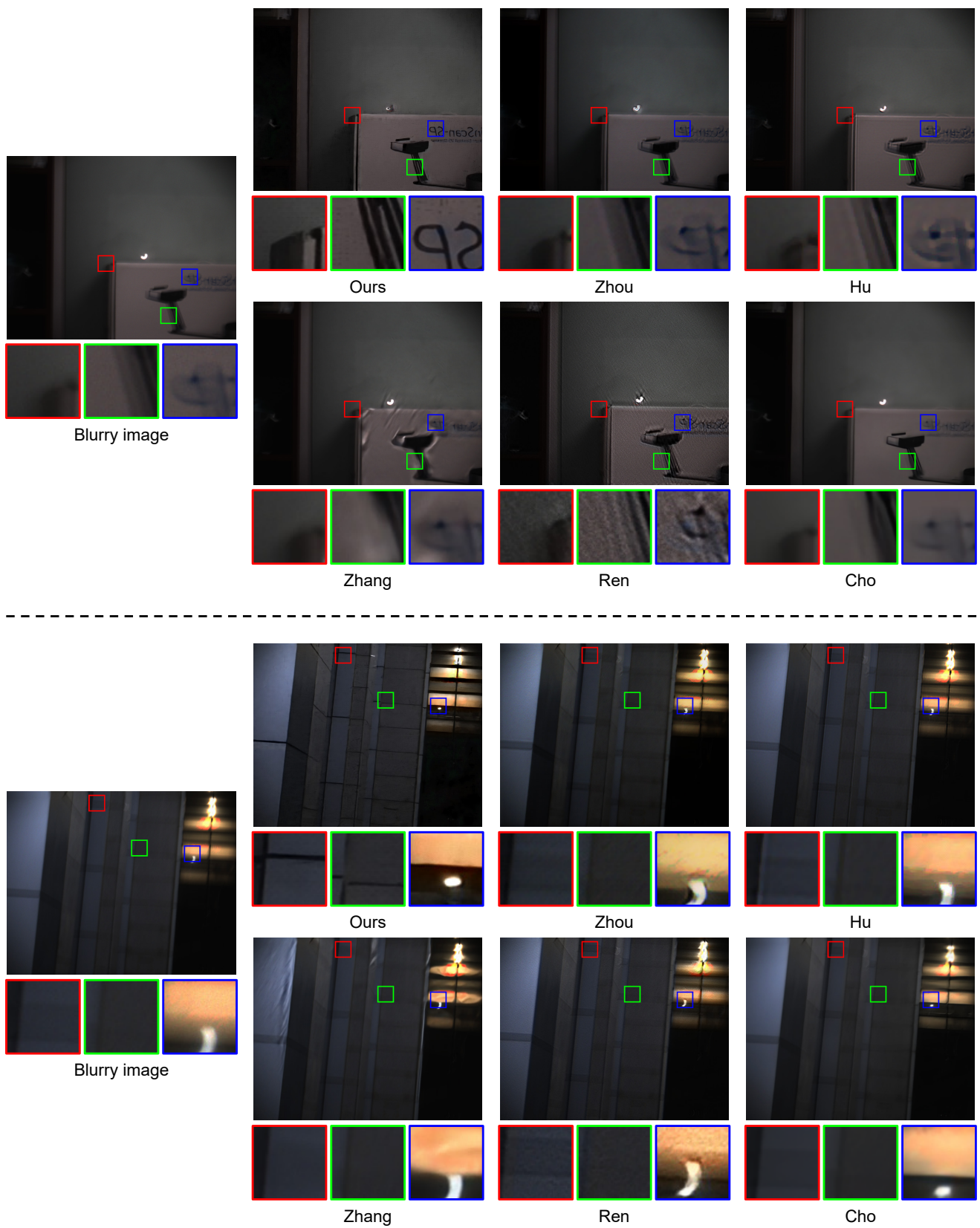


Fig. 13 Additional qualitative comparisons on real data captured by our RGB-DAVIS hybrid camera system among our method, our preliminary work (Zhou et al, 2021), and four image-based deblurring methods (Hu et al, 2018; Zhang et al, 2019; Ren et al, 2020; Cho et al, 2021).