CutMIB: Boosting Light Field Super-Resolution via Multi-View Image Blending —— Supplementary Material ——

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Overview

This supplementary document is organized as follows:
Sec. 1 analyzes the effect of CutMIB on different model sizes and training dataset sizes.
Sec. 2 analyzes the effect of CutMIB trained on different training patch sizes.
Sec. 3 provides detailed structures of the Feature Extractor and the Feature Decoder.

1. Different Model Ssizes and Ttraining Dataset Sizes

We investigate how the model size affects the performance gain using CutMIB. We compare the average performance results ($\times 4$ SR) of InterNet [1] models with different channel sizes trained using CutMIB on a full-sized dataset. Table 1 shows that CutMIB improves the performance of models with different channel sizes. This result indicates that CutMIB is effective in improving the performance of light field SR models of different sizes, and the performance increase is not solely due to the increase in model parameters, but rather due to the improved data augmentation strategy.

Table 1. The effect of CutMIB on different model sizes.

Model size	25%c	50%c	100%c	150%c	175%c	200%c
InterNet	28.573	29.372	30.440	30.507	30.583	30.594
InterNet	+.017	+.042	+.080	+.034	+.026	+.063

We further investigate the model performance trained with different training dataset sizes. We use 100%, 75%, 50%, 25%, 15% and 10% of the training datasetm, as can be seen in Table 2. Results show that: CutMIB can achieve greater improvements on smaller training sets compared to the full training set. The results indicate that CutMIB is a useful DA strategy for light field SR, especially when the training dataset is small.

Table 2. The effect of CutMIB on different training dataset sizes.

Dataset size	10%	15%	25%	50%	75%	100%
InterNet	29.542	29.712	29.815	29.807	29.908	30.440
InterNet	+.138	+.109	+.065	+.084	+.064	+.080

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2. Different Training Patch Sizes

In this section, we analyze the effect of training InterNet with different patch sizes and calculate the improvement of CutMIB compared to CutBlur. As shown in the following figure, when the patch size is small, CutMIB is more likely to crop a patch at the zero-parallax plane, which makes it similar to CutBlur, and the performance gain of CutMIB over CutBlur is relatively small. However, as the patch size becomes larger, CutMIB outperforms CutBlur significantly because more information from various depths and views can be utilized. Therefore, the effectiveness of CutMIB depends on the training patch size, and it can improve the performance of InterNet in large patch size scenarios where more multi-view information can be leveraged.

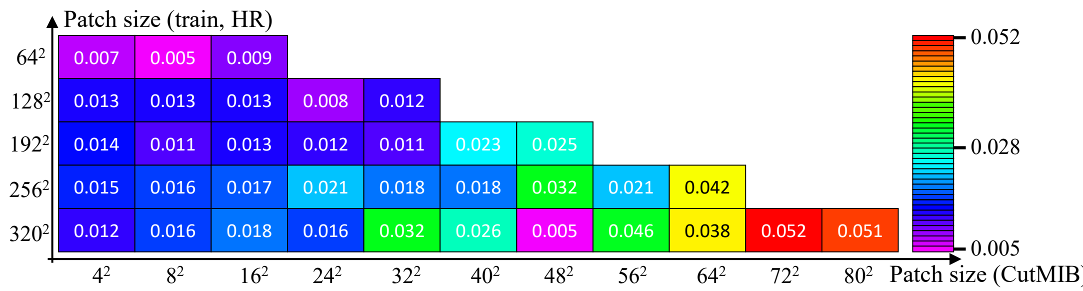

Figure 1. Effectiveness of different training patch size.

3. Angular Consistency Comparisons

Since light field SR methods are required to preserve the light field parallax structure and generate angular-consistent high-resolution LF images, we evaluate the angular consistency of different SR methods by visualizing their EPI slices. As is shown in Figure 2, models trained with CutMIB can generate more straight and clear line patterns, which demonstrates that the parallax structures are well preserved.

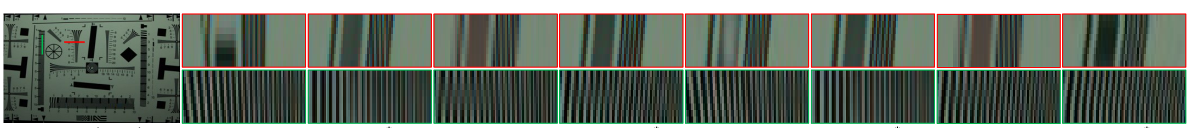

Figure 2. Angular consistency comparisons in terms of EPI slices.

References

[1] Yingqian Wang, Longguang Wang, Jungang Yang, Wei An, Jingyi Yu, and Yulan Guo. Spatial-angular interaction for light field image super-resolution. In *ECCV*, 2020. 1