

# Supplementary Material

## Unveiling Deep Shadows: A Survey on Image and Video Shadow Detection, Removal, and Generation in the Era of Deep Learning

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This supplementary material consists of five parts. Parts 1 to 5 provide visual comparisons of various methods applied to image shadow detection, video shadow detection, instance shadow detection, general image shadow removal, and document shadow removal, respectively. The images selected for comparison are chosen according to the criterion of significant differences among the results of the compared methods and between each method's results and the ground-truth images.

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*The results, trained models, and evaluation metrics are publicly available at <https://github.com/xw-hu/Unveiling-Deep-Shadows>.*

## Part 1: Visual Comparisons on Image Shadow Detection

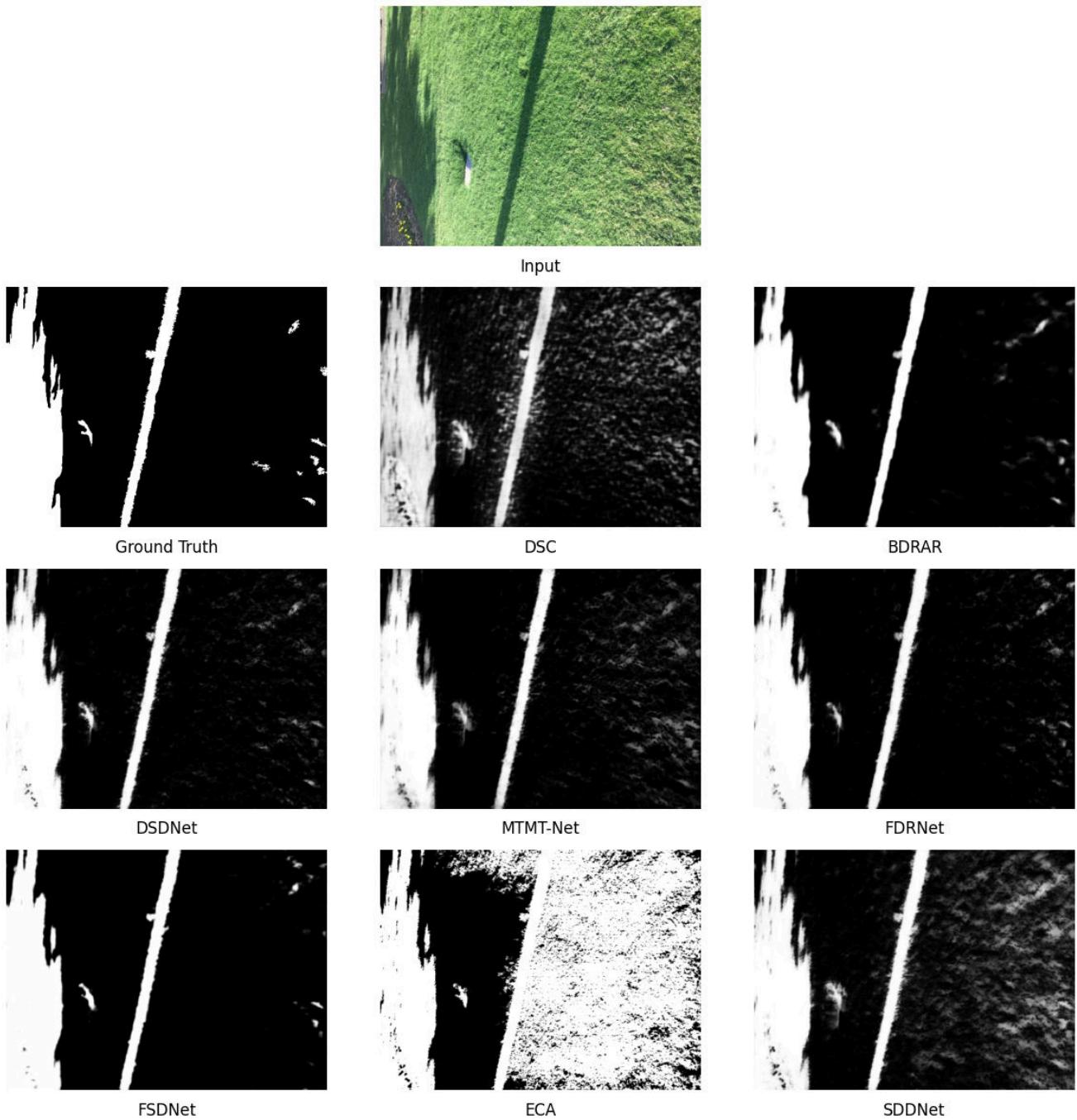


Fig. 1. Visual comparison result #1 on the CUHK-Shadow dataset (white indicates shadows and black indicates non-shadows).

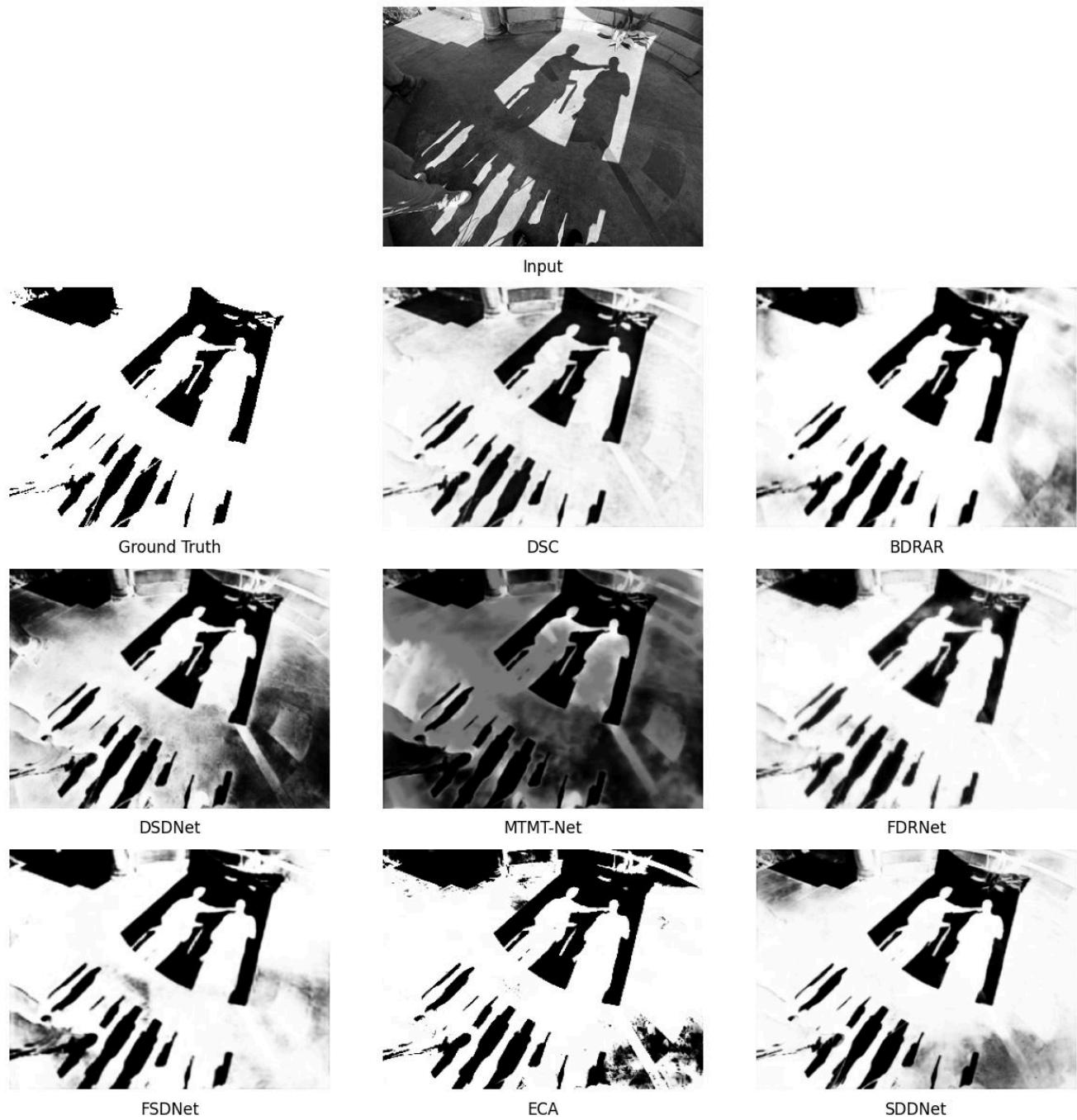


Fig. 2. Visual comparison result #2 on the CUHK-Shadow dataset (white indicates shadows and black indicates non-shadows).

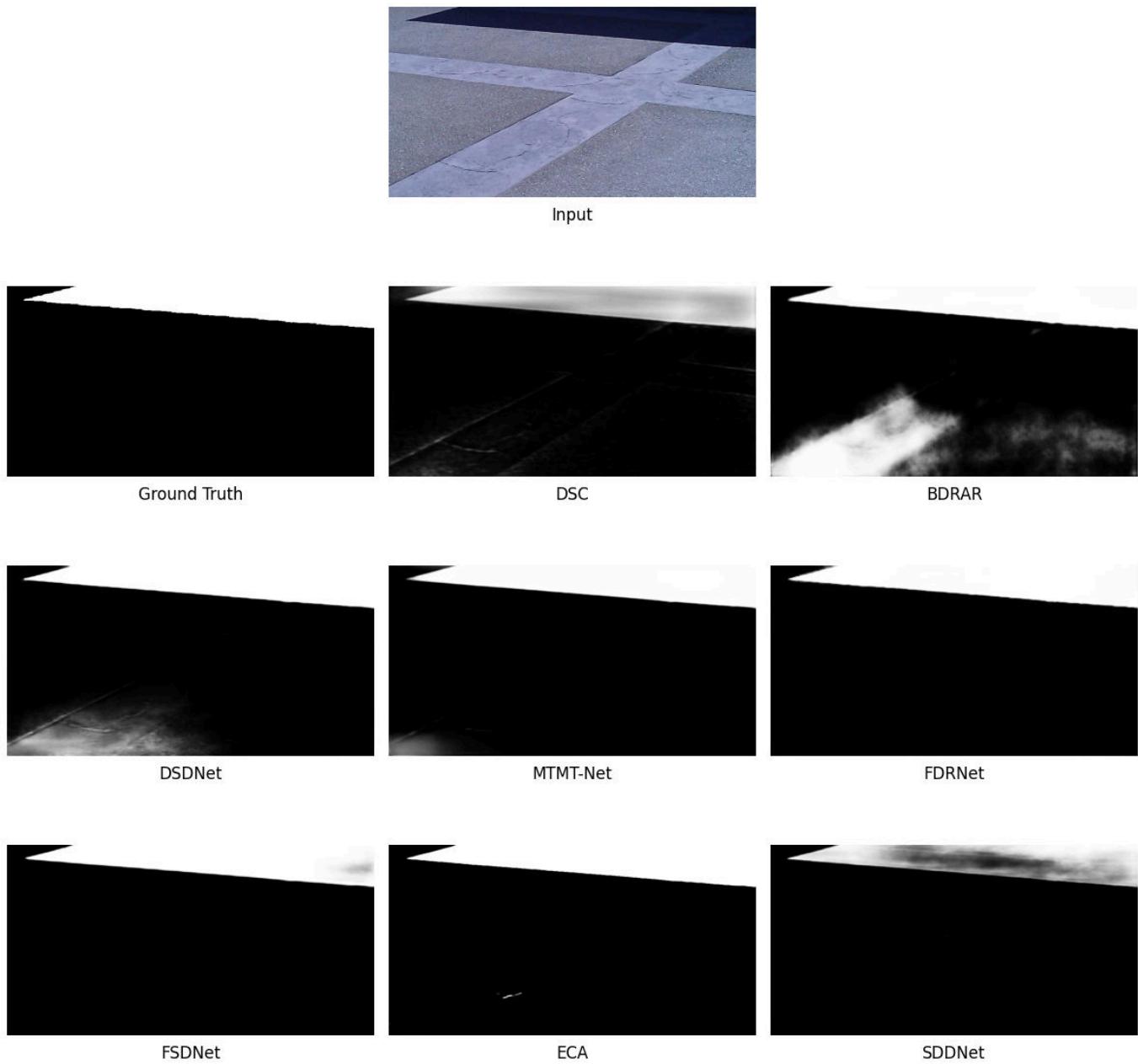


Fig. 3. Visual comparison result #3 on the SBU-Refined dataset (white indicates shadows and black indicates non-shadows).

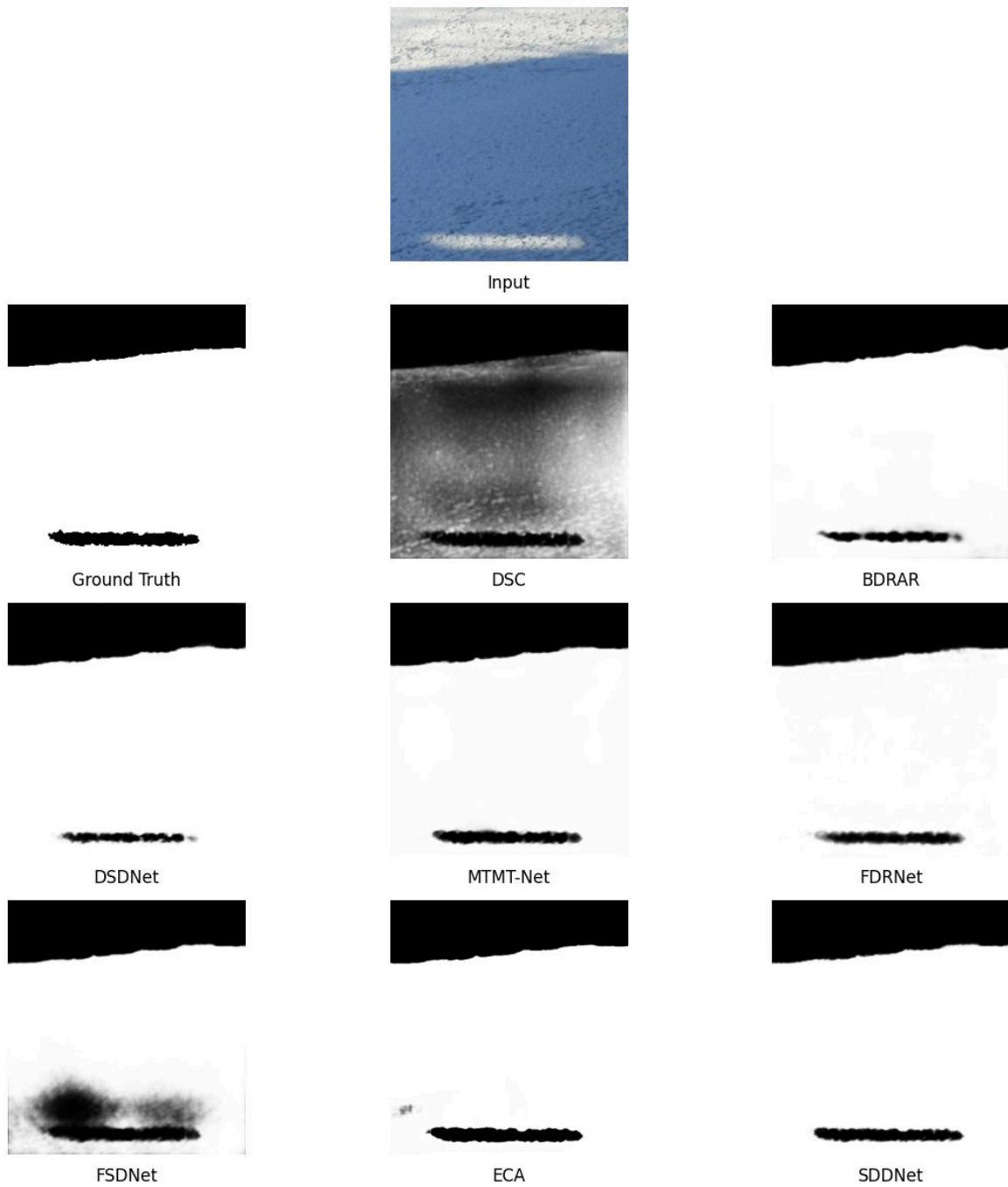


Fig. 4. Visual comparison result #4 on the SBU-Refined dataset (white indicates shadows and black indicates non-shadows).

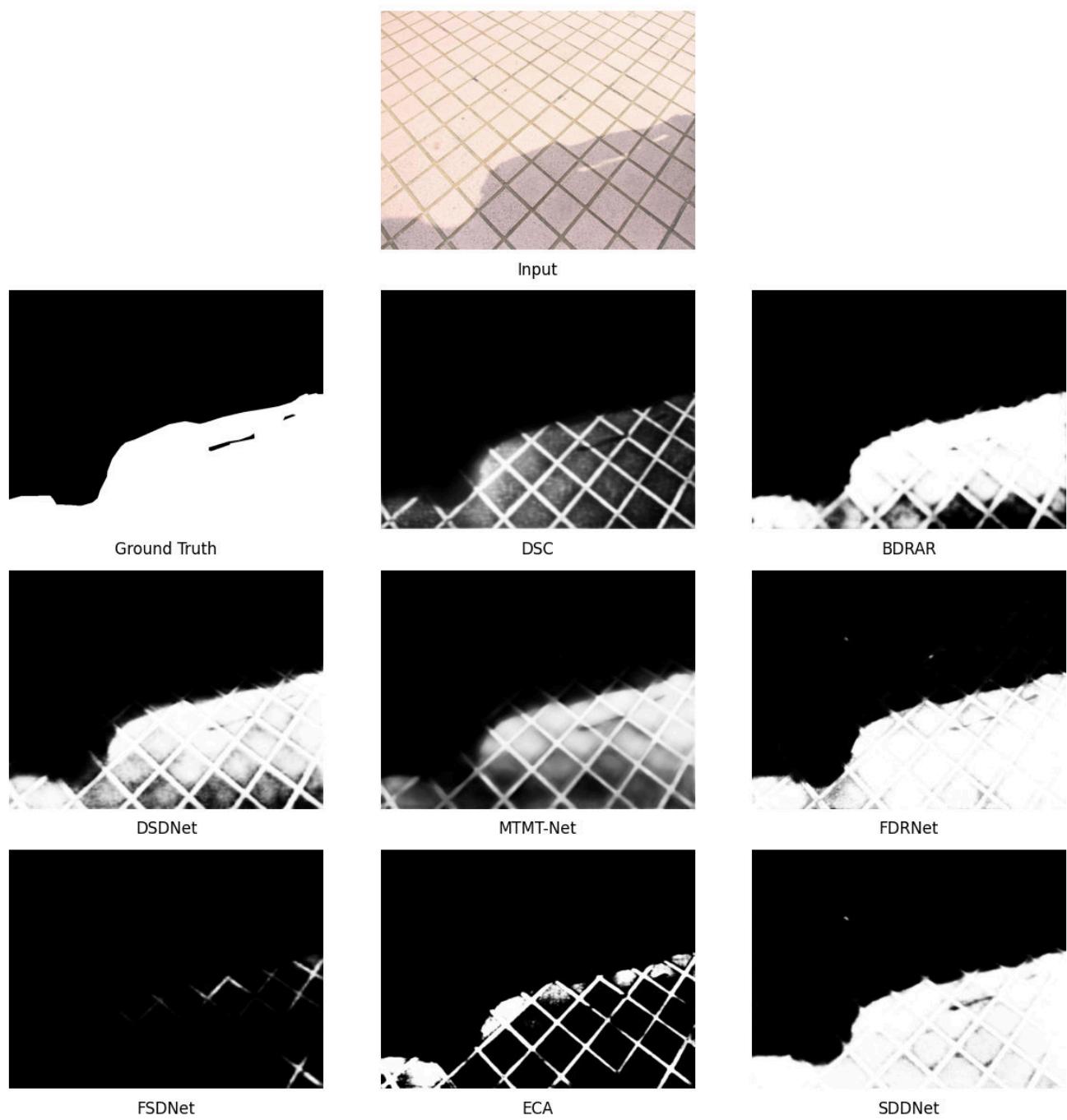


Fig. 5. Visual comparison result #5 on the SRD dataset (cross-dataset generalization evaluation; white indicates shadows and black indicates non-shadows).

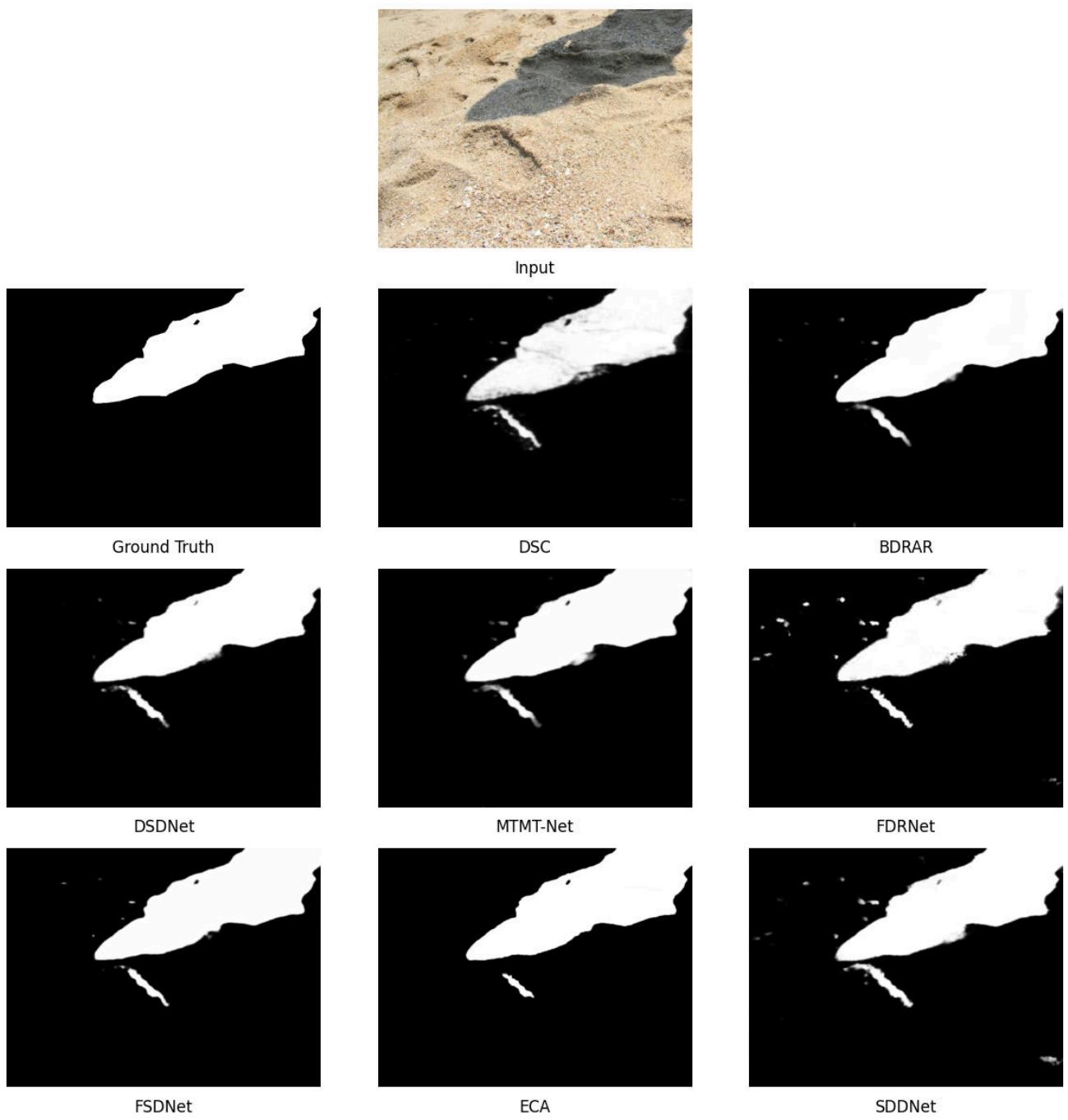


Fig. 6. Visual comparison result #6 on the SRD dataset (cross-dataset generalization evaluation; white indicates shadows and black indicates non-shadows).

## Part 2: Visual Comparisons on Video Shadow Detection

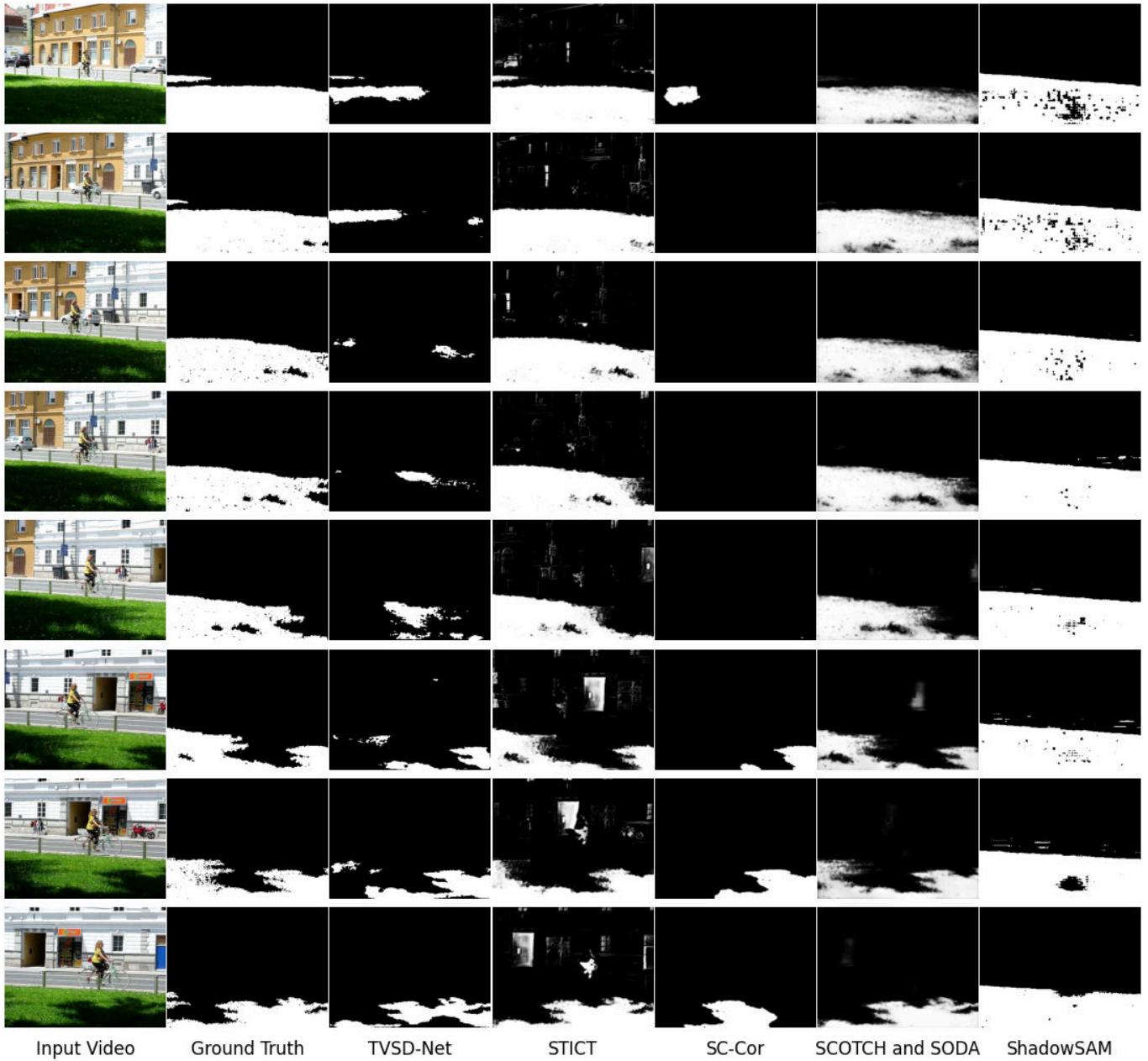


Fig. 7. Visual comparison result #1 on the ViSha dataset (white indicates shadows and black indicates non-shadows).

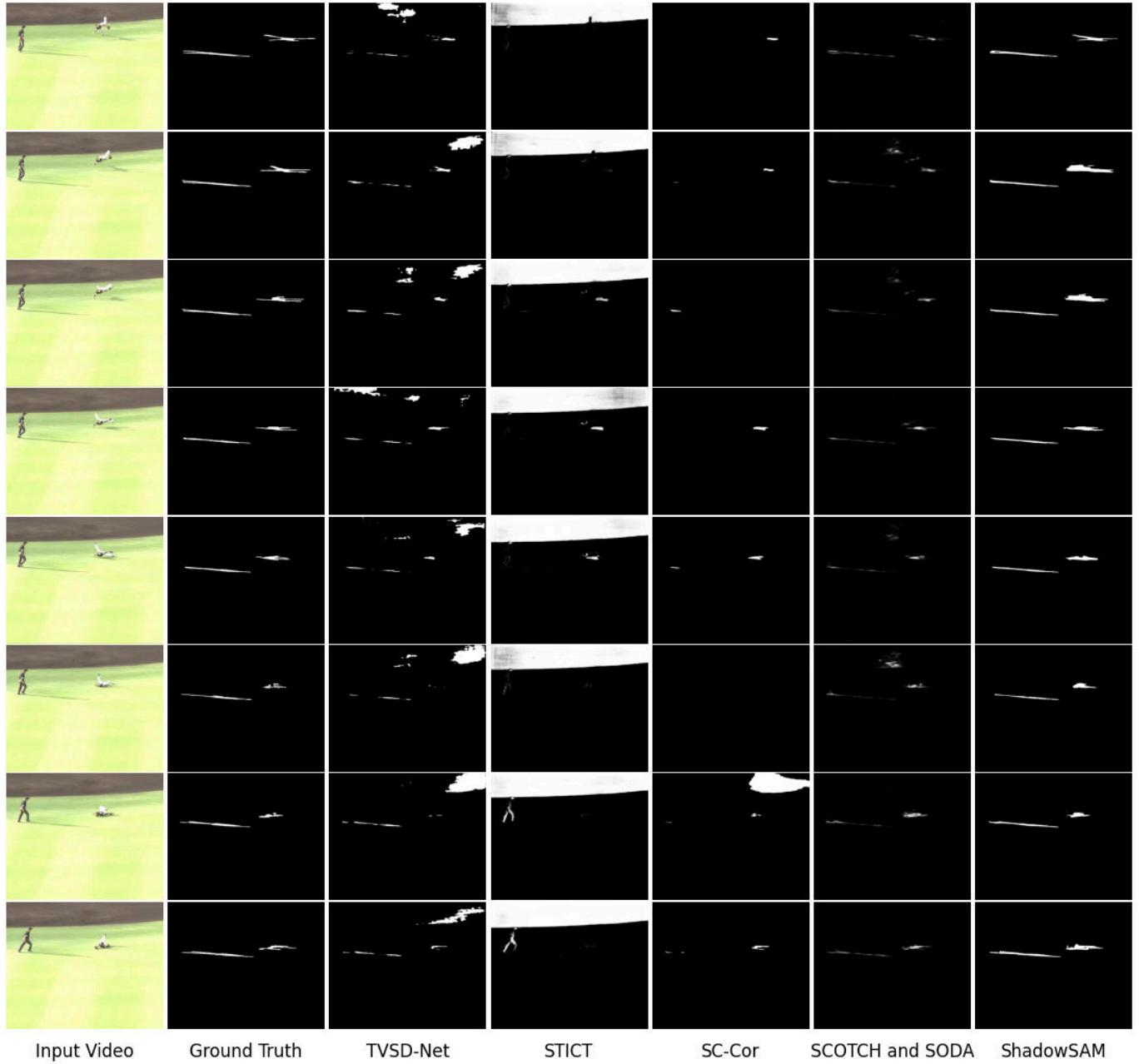


Fig. 8. Visual comparison result #2 on the ViSha dataset (white indicates shadows and black indicates non-shadows).

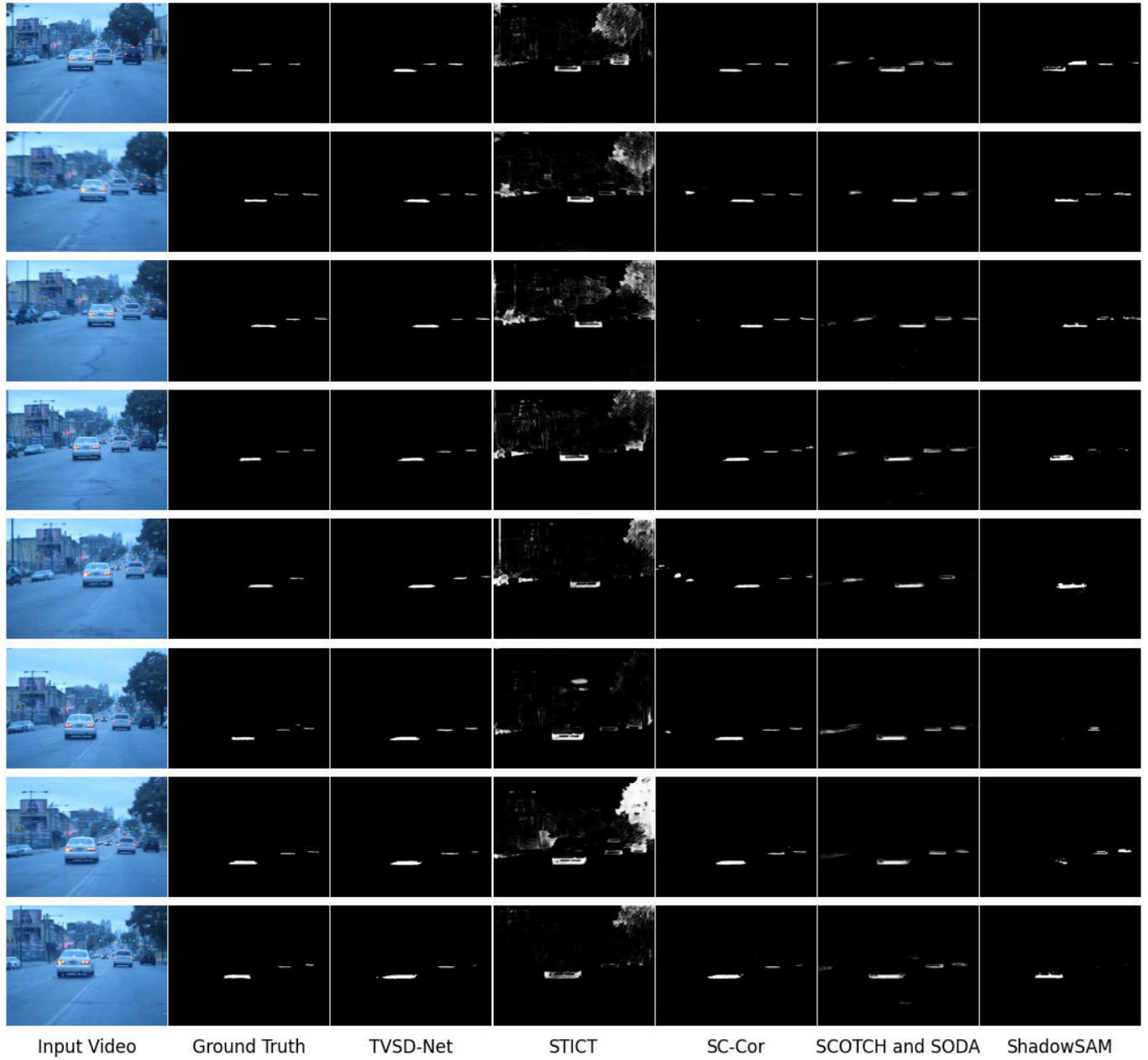


Fig. 9. Visual comparison result #3 on the ViSha dataset (white indicates shadows and black indicates non-shadows).

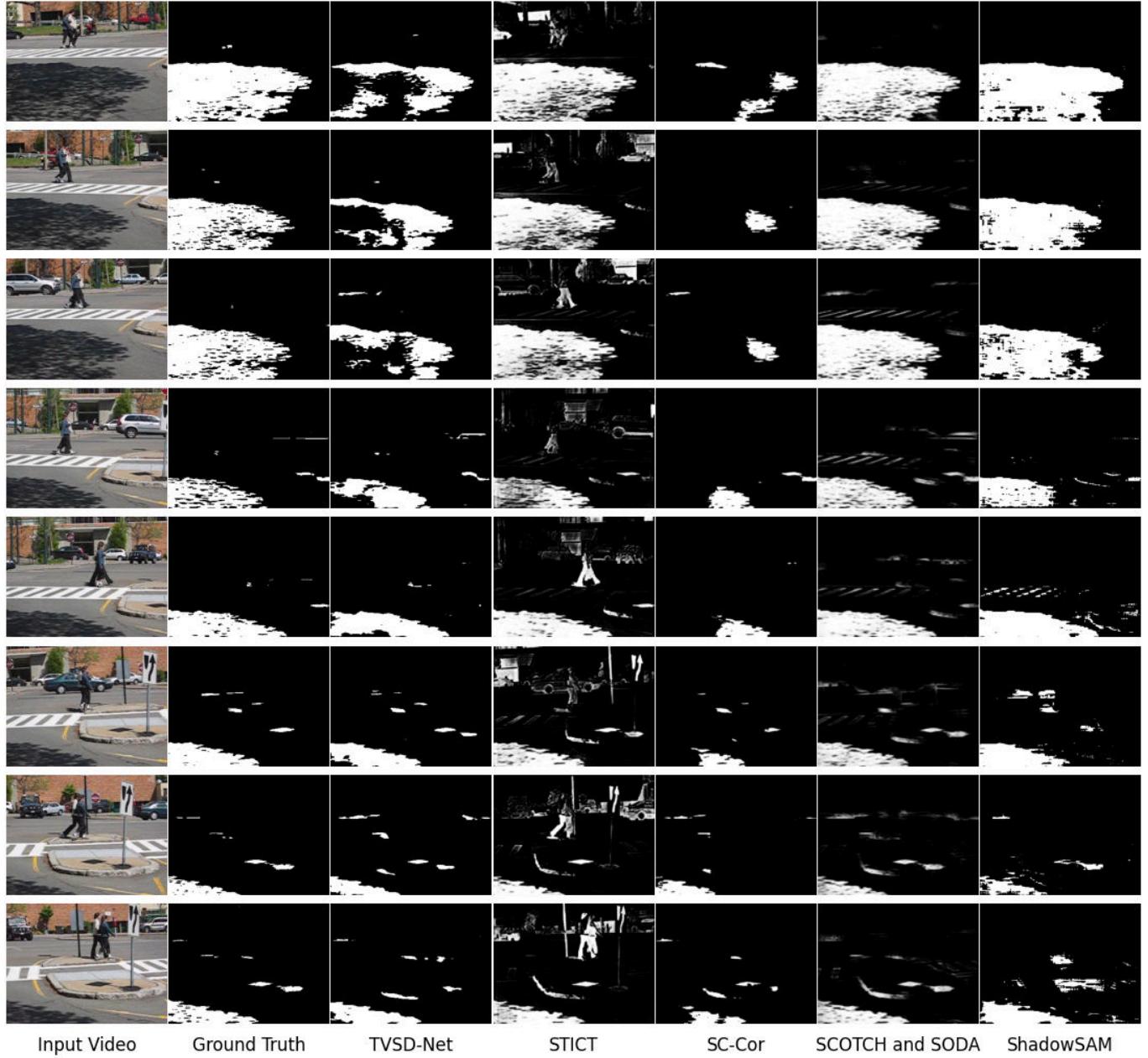


Fig. 10. Visual comparison result #4 on the ViSha dataset (white indicates shadows and black indicates non-shadows).

### Part 3: Visual Comparisons on Instance Shadow Detection

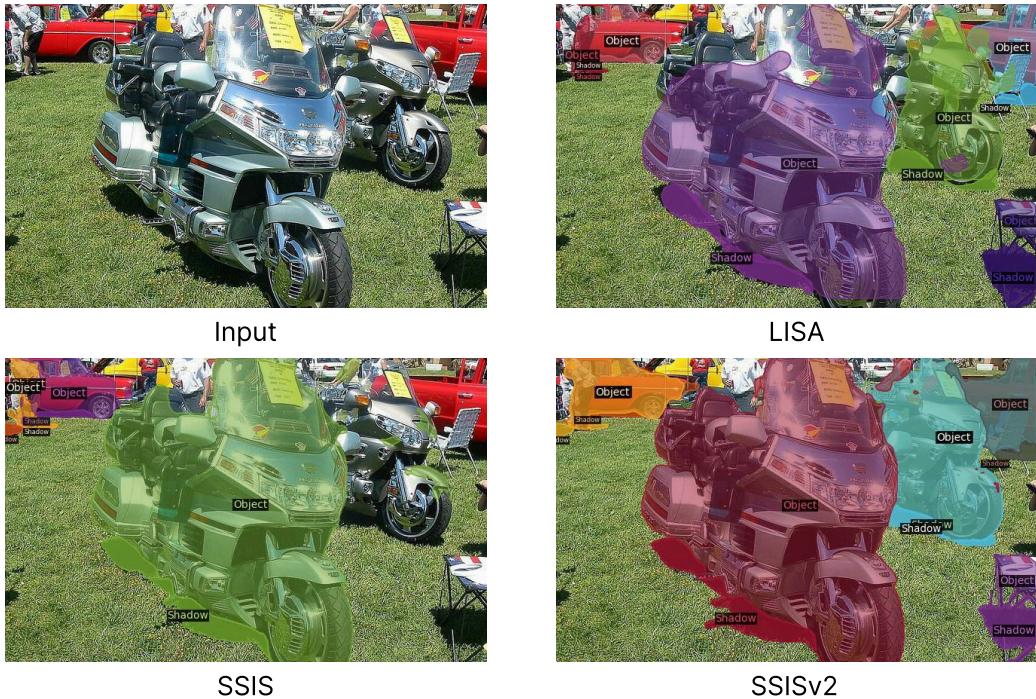


Fig. 11. Visual comparison result #1 on the SOBA dataset (paired shadow and object instances are indicated in the same color).



Fig. 12. Visual comparison result #2 on the SOBA dataset (paired shadow and object instances are indicated in the same color).



Fig. 13. Visual comparison result #3 on the SOBA dataset (paired shadow and object instances are indicated in the same color).

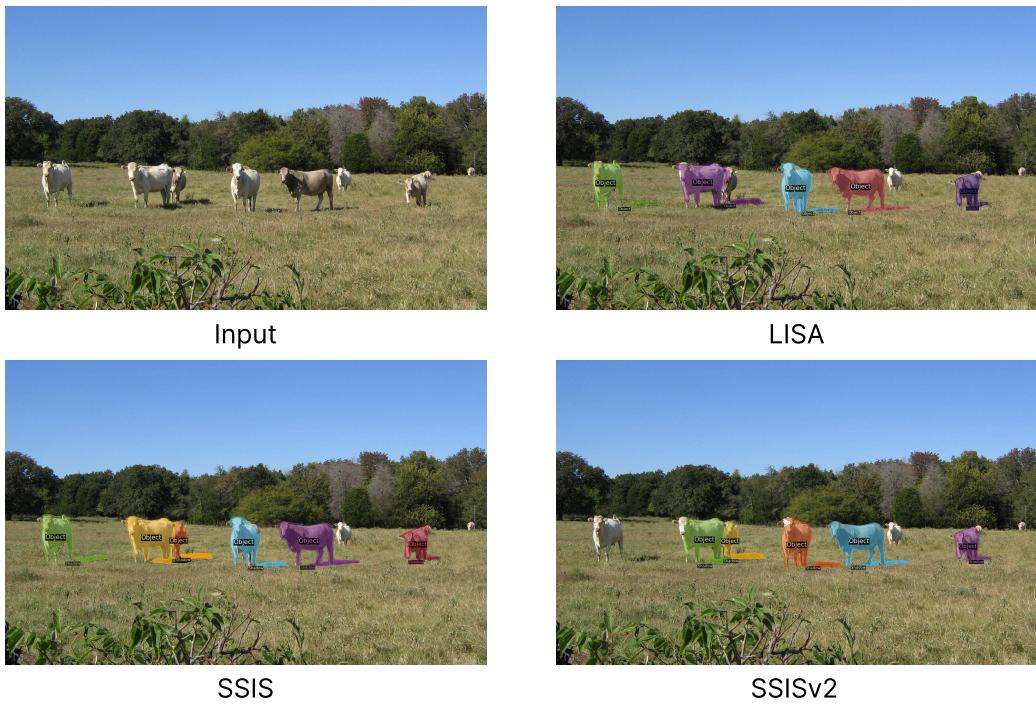


Fig. 14. Visual comparison result #4 on the SOBA dataset (paired shadow and object instances are indicated in the same color).

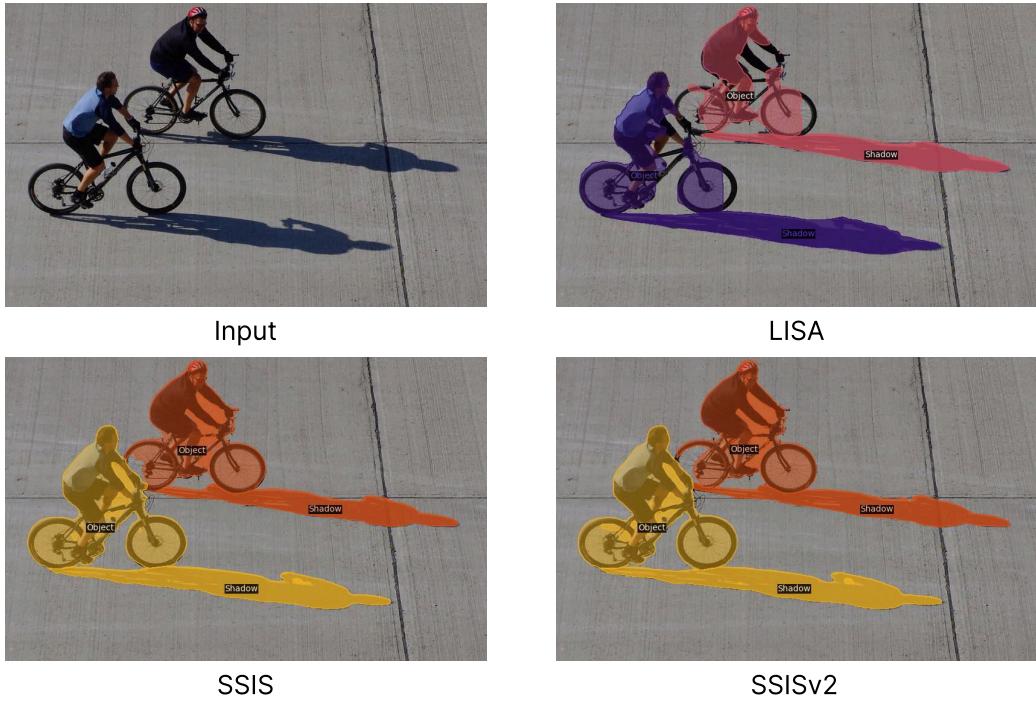


Fig. 15. Visual comparison result #5 on the SOBA dataset (paired shadow and object instances are indicated in the same color).

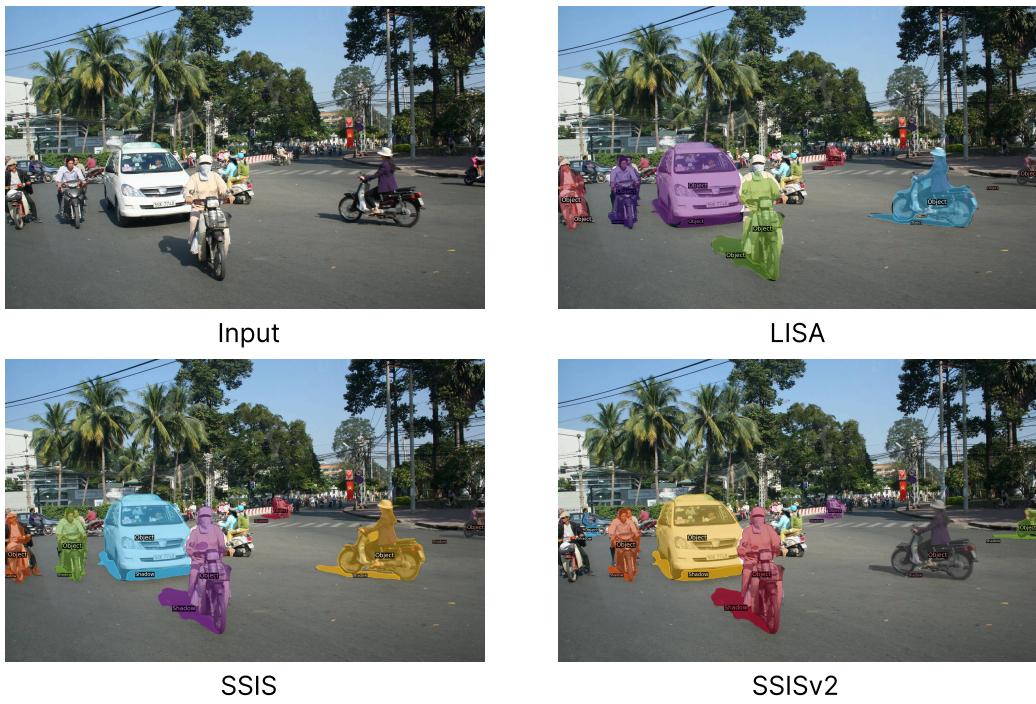


Fig. 16. Visual comparison result #6 on the SOBA dataset (paired shadow and object instances are indicated in the same color).

## Part 4: Visual Comparisons on Image Shadow Removal

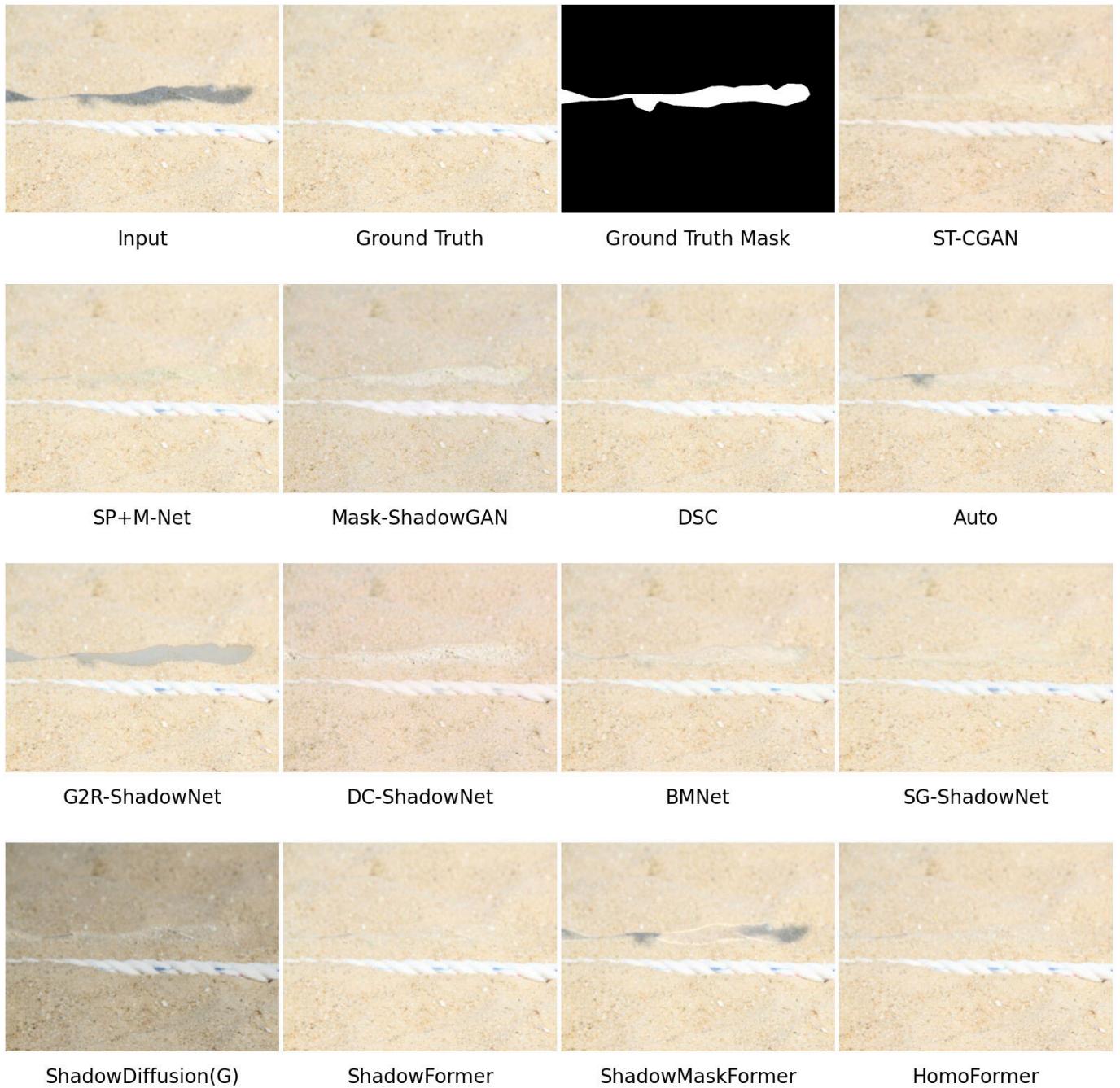


Fig. 17. Visual comparison result #1 on the SRD dataset.

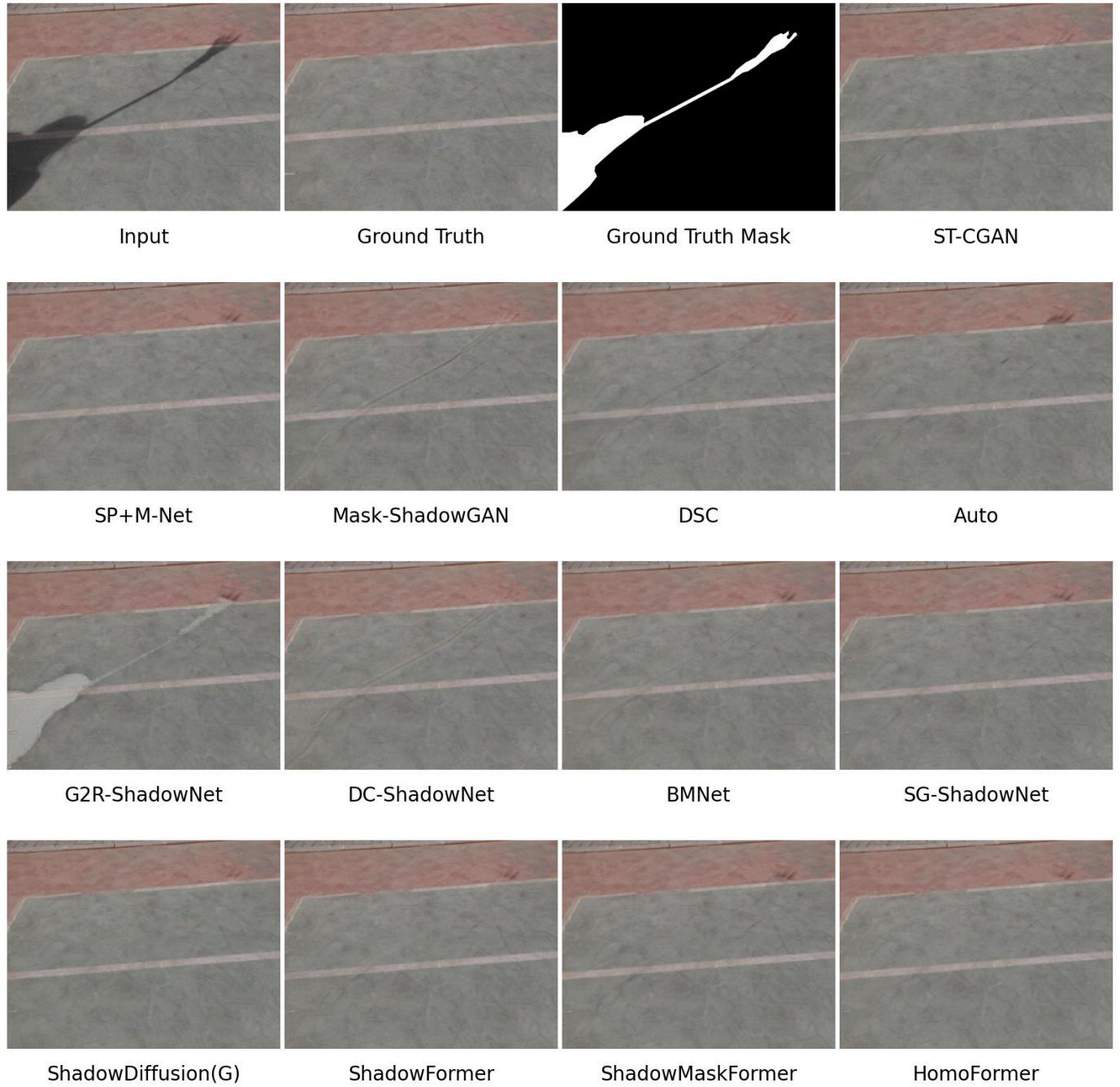


Fig. 18. Visual comparison result #2 on the SRD dataset.

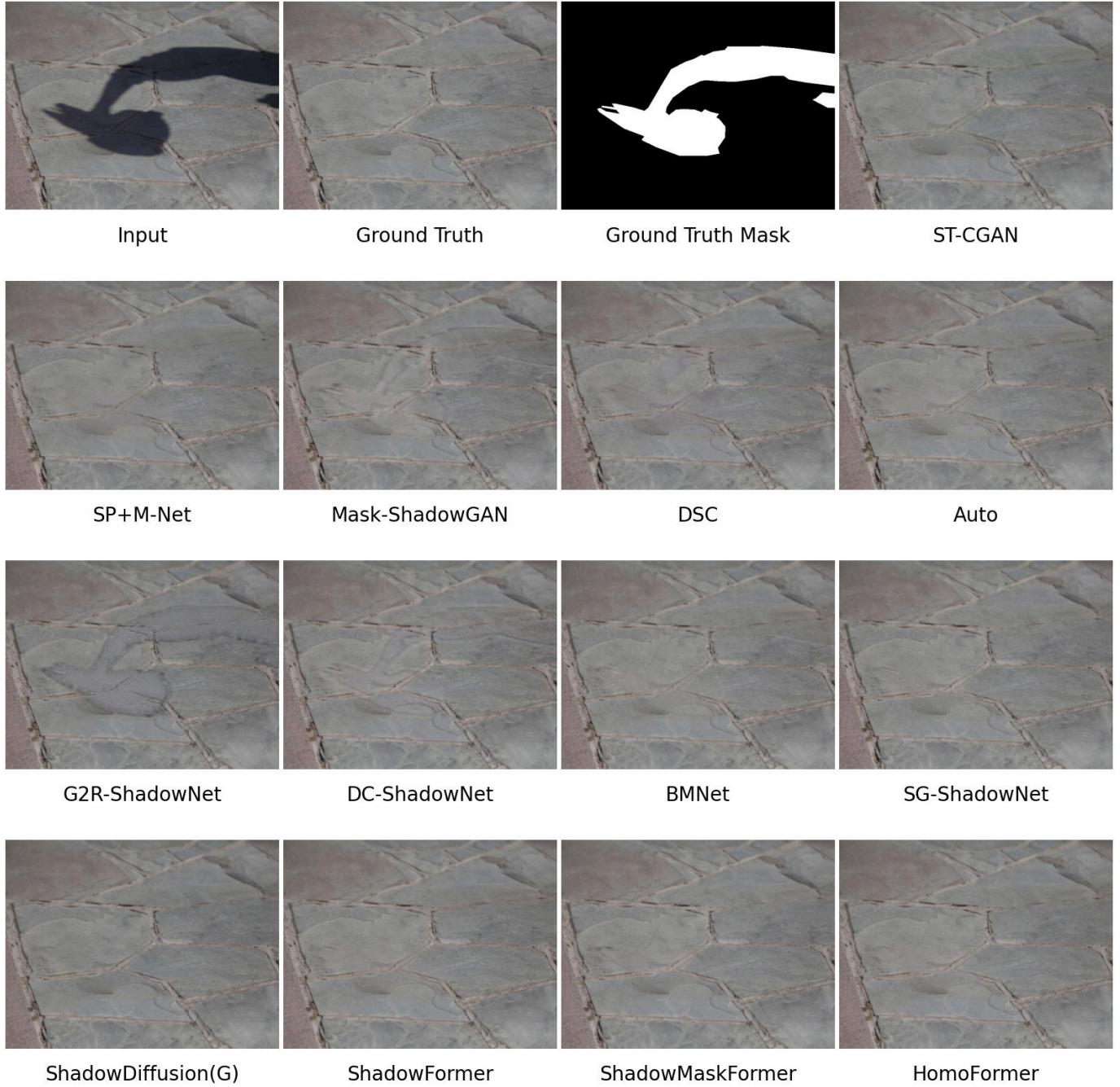


Fig. 19. Visual comparison result #3 on the SRD dataset.

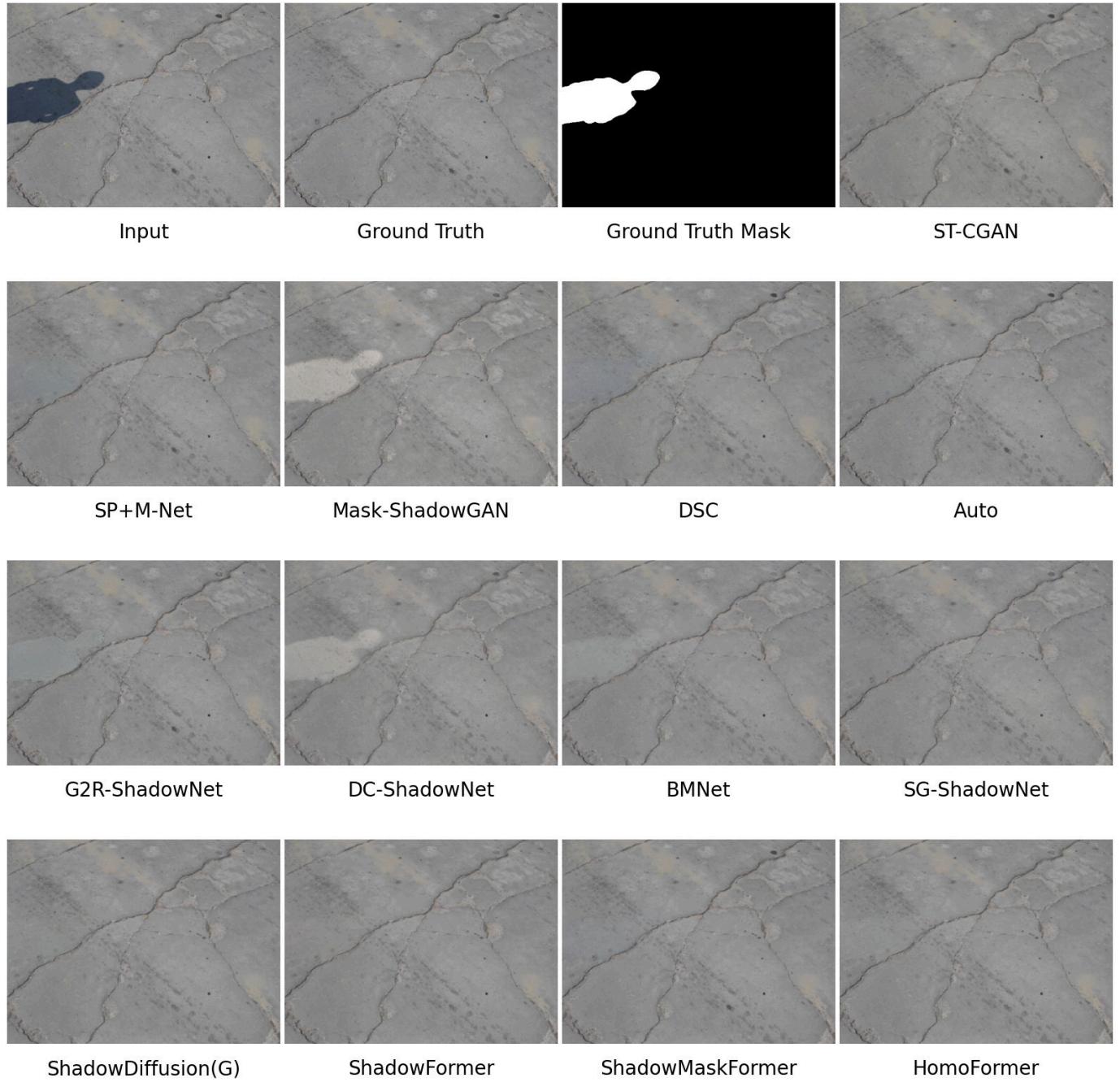


Fig. 20. Visual comparison result #4 on the ISTD+ dataset.

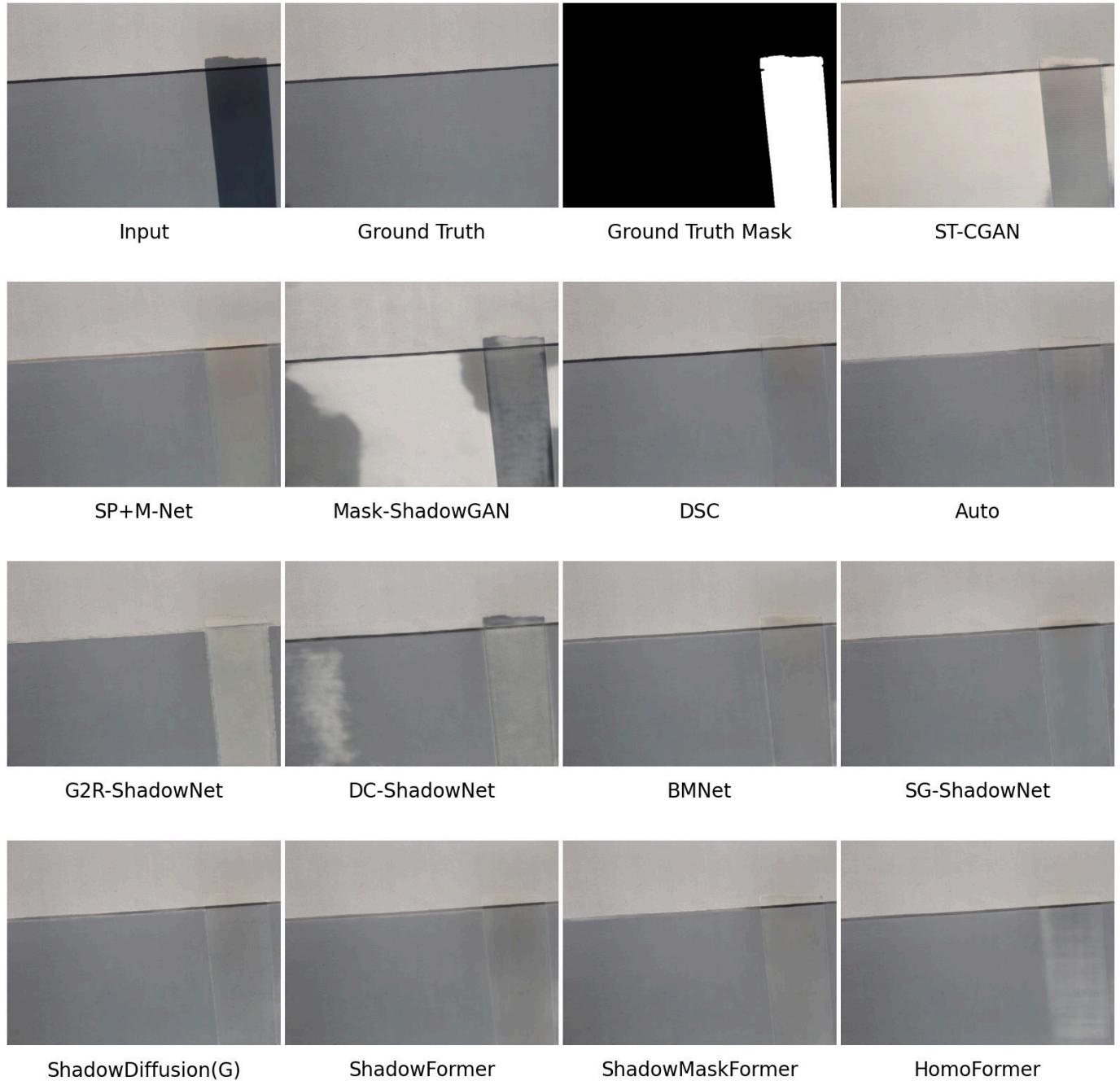


Fig. 21. Visual comparison result #5 on the ISTD+ dataset.

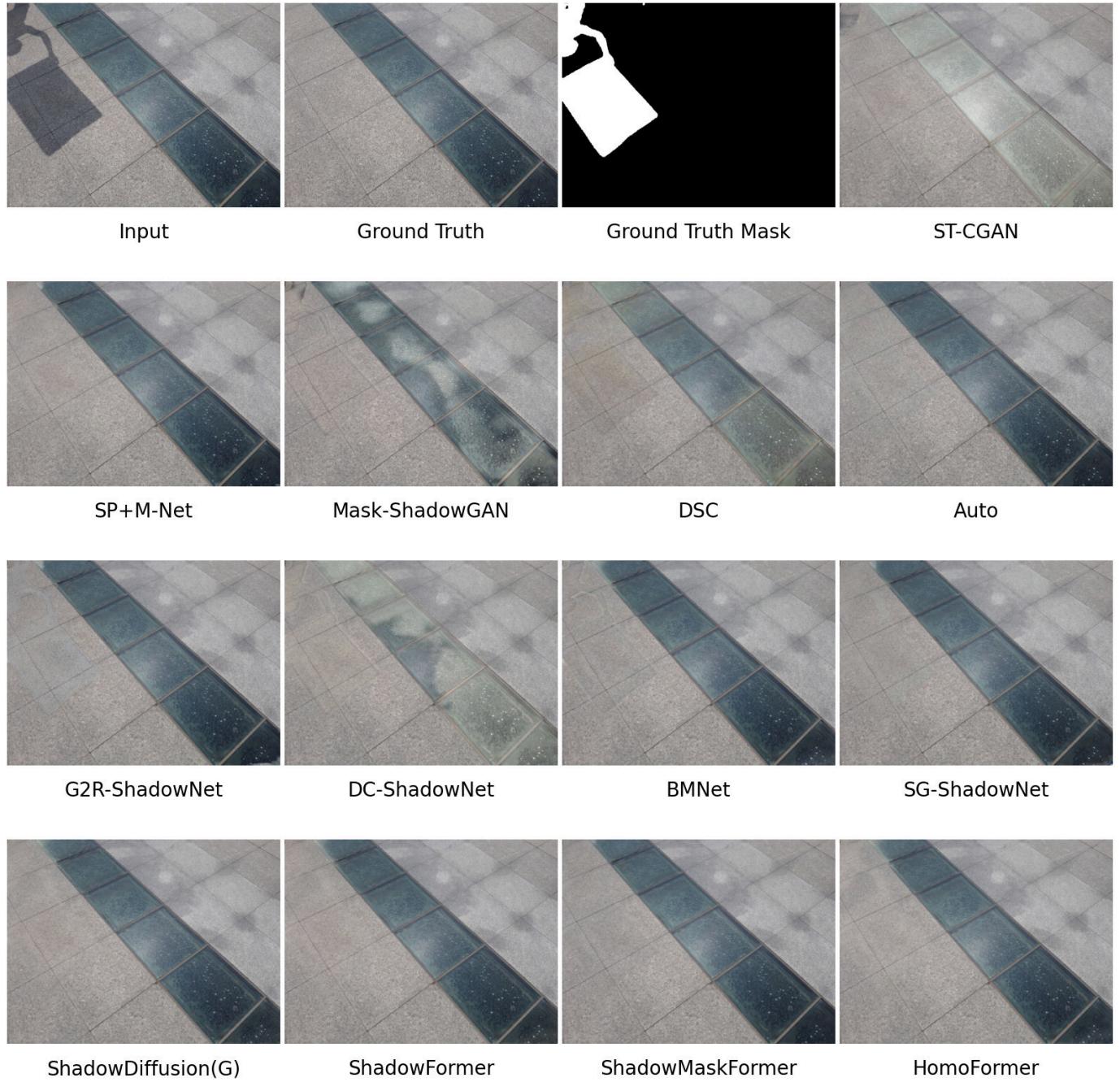


Fig. 22. Visual comparison result #6 on the ISTD+ dataset.

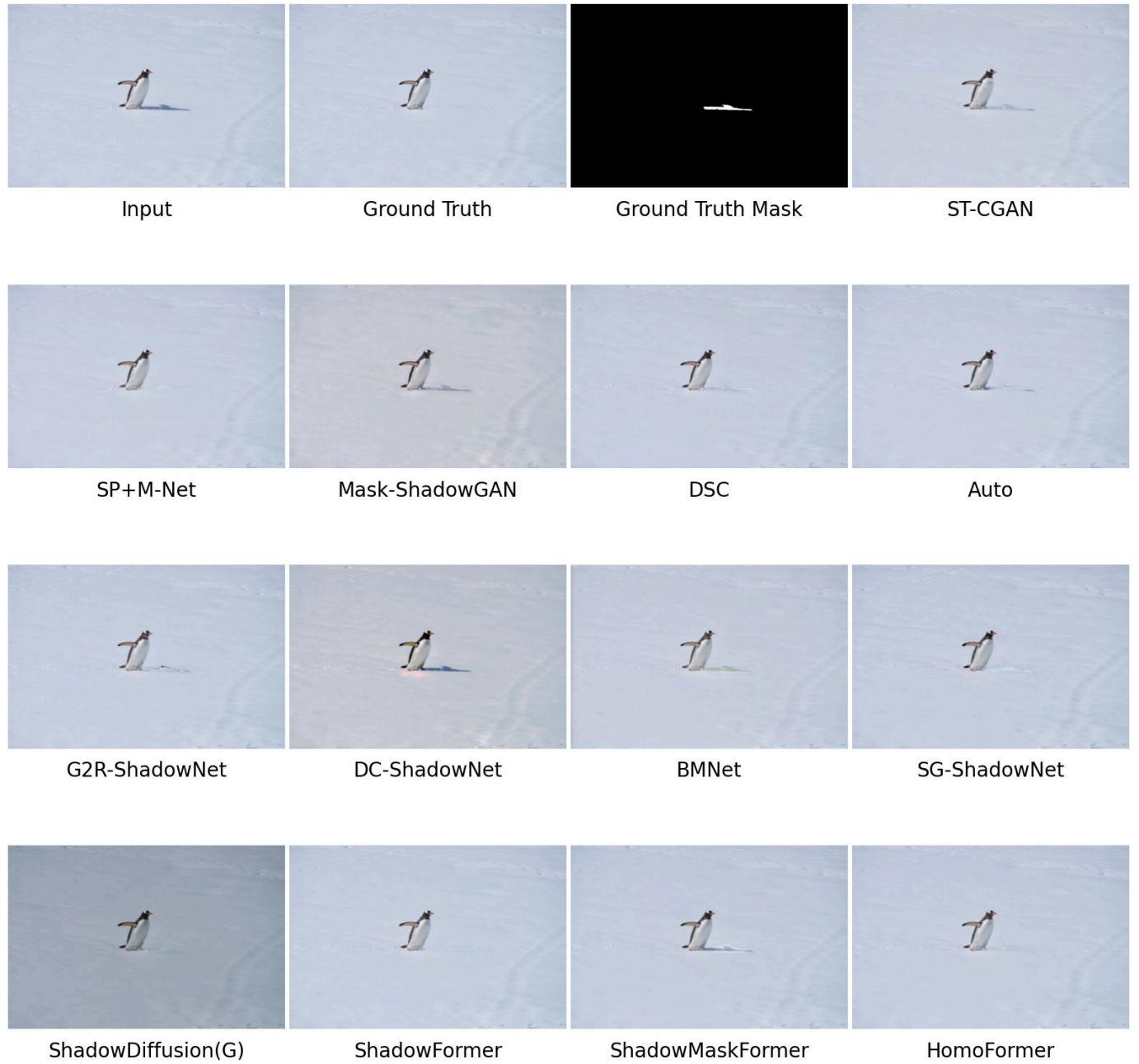


Fig. 23. Visual comparison result #7 on the DESOBA dataset (cross-dataset generalization evaluation).

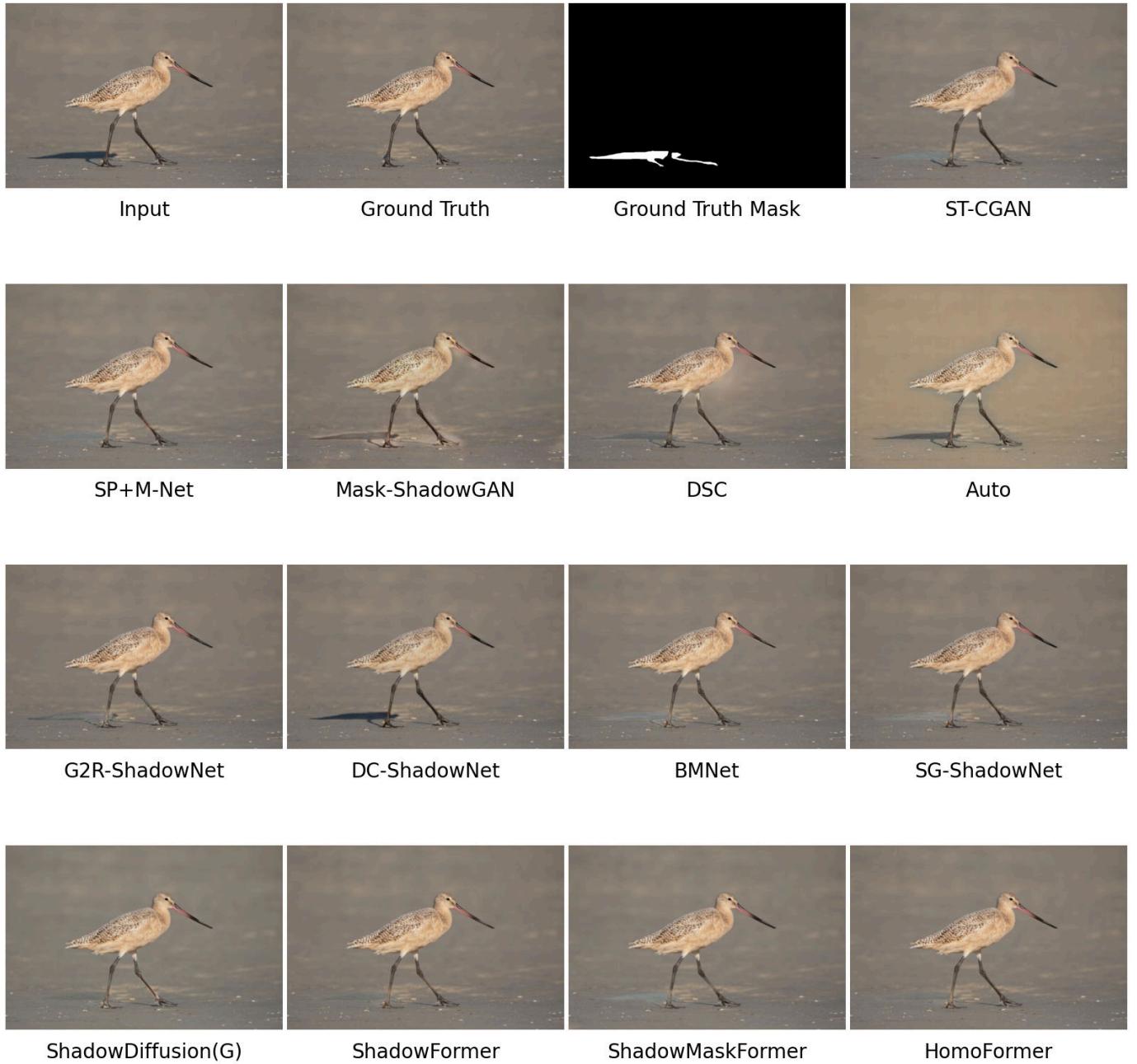


Fig. 24. Visual comparison result #8 on the DESOBA dataset (cross-dataset generalization evaluation).

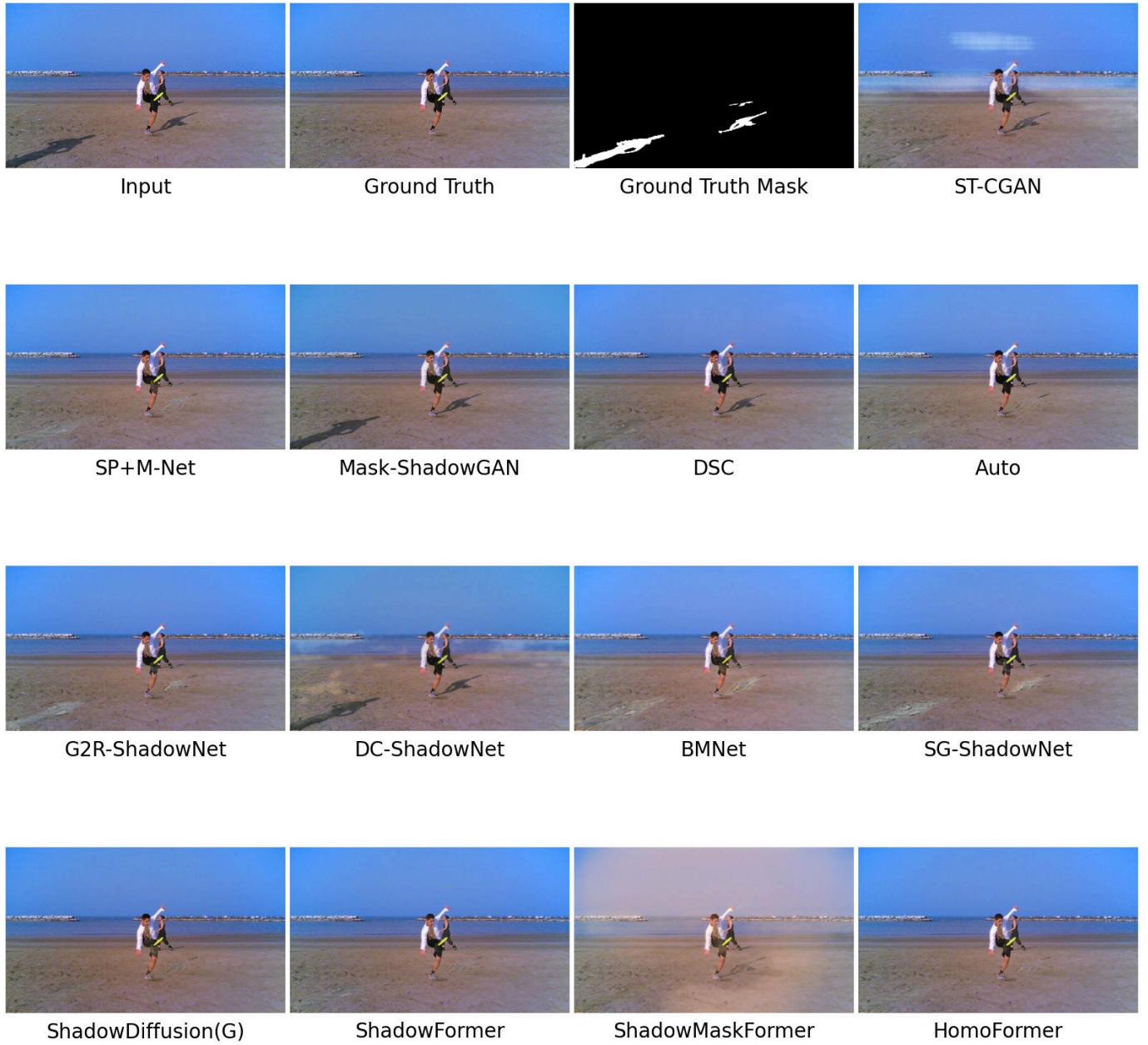
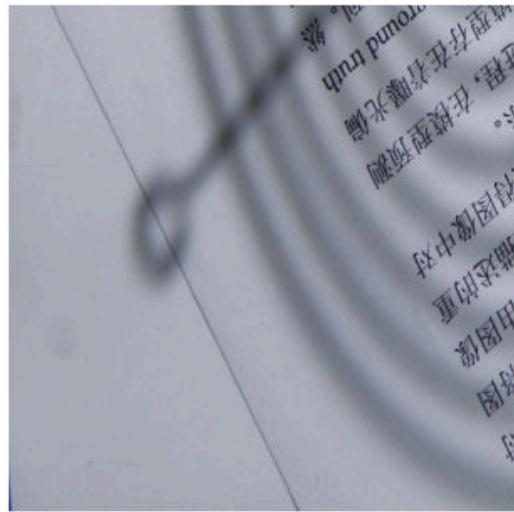


Fig. 25. Visual comparison result #9 on the DESOBA dataset (cross-dataset generalization evaluation).

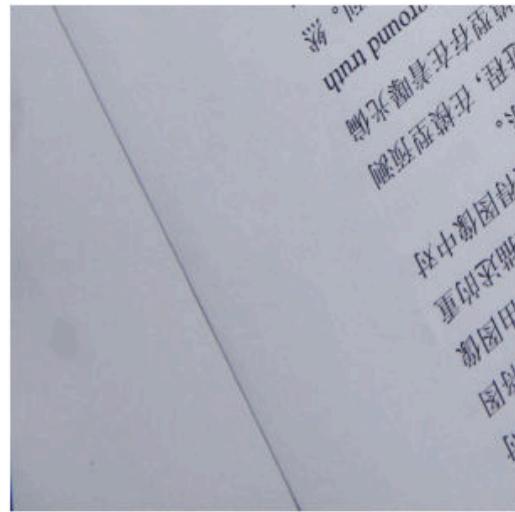


Fig. 26. Visual comparison result #10 on the DESOBA dataset (cross-dataset generalization evaluation).

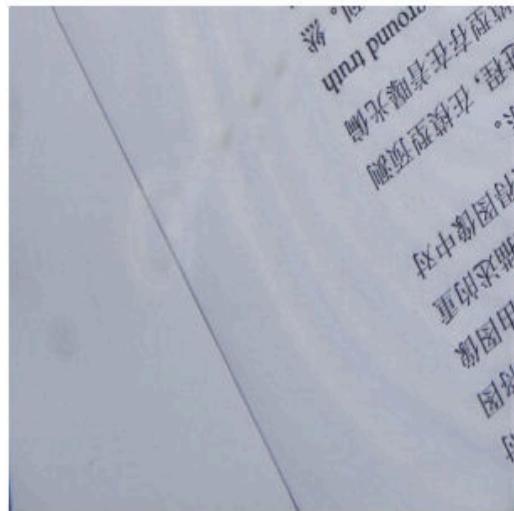
## Part 5: Visual Comparisons on Document Shadow Removal



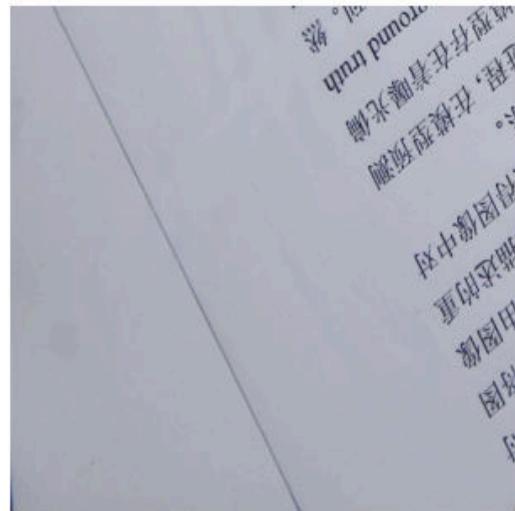
Input



Ground Truth



BEDSR-Net



FSENet

Fig. 27. Visual comparison result #1 on the RDD dataset.

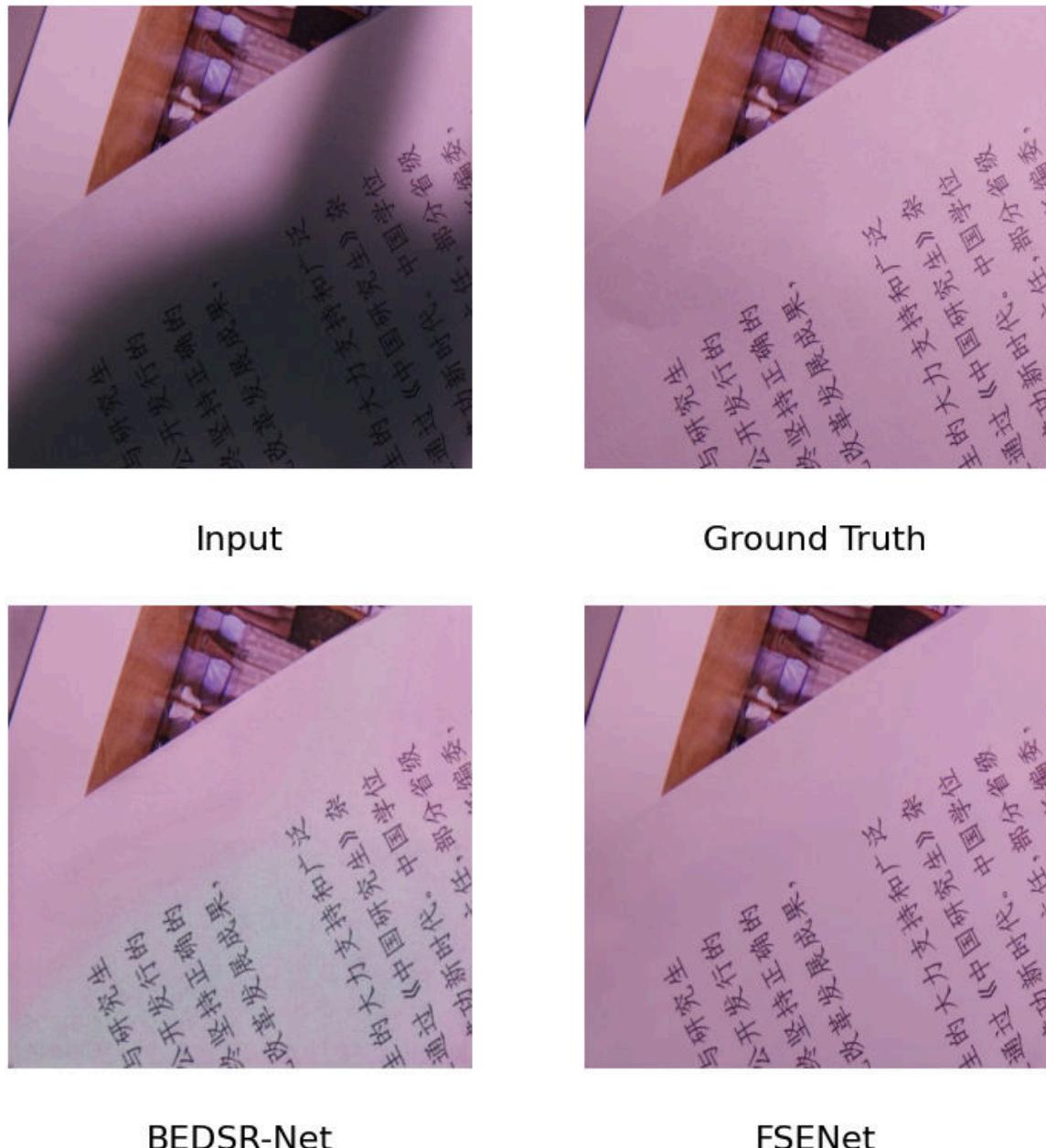


Fig. 28. Visual comparison result #2 on the RDD dataset.



Fig. 29. Visual comparison result #3 on the RDD dataset.

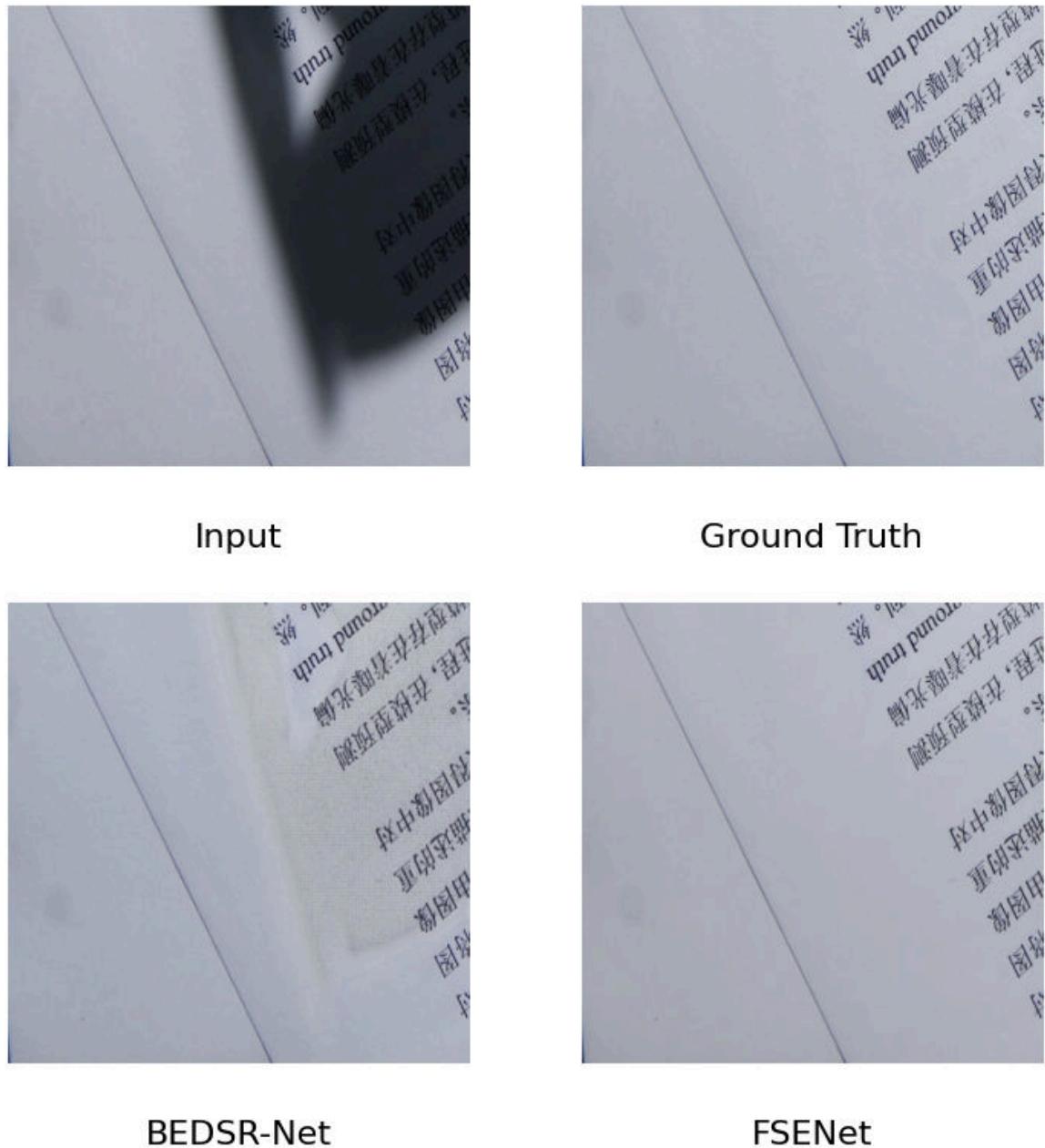


Fig. 30. Visual comparison result #4 on the RDD dataset.