Reflection-Aware Saliency Map and Characteristic-Focused Policy Network with Adaptive Curriculum Based Data Augmentation for Image Reflection Removal

周無右 池永研究室 修士課程修了

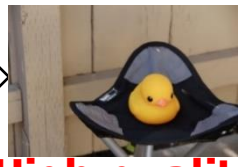
Background

Input Image
With Reflection

Low-quality

Image Reflection Removal Model

Output Image
without Reflection



High-quality

Applications

Photography

Surveillance

Augmented Reality

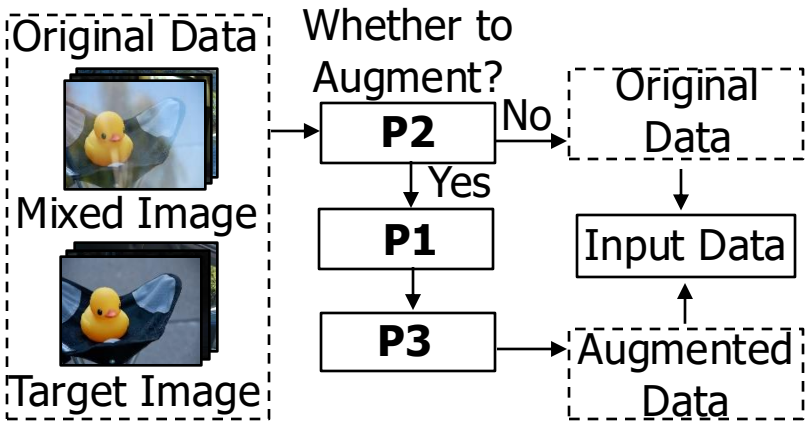
Challenges

Existing Dataset | Real-world Scene

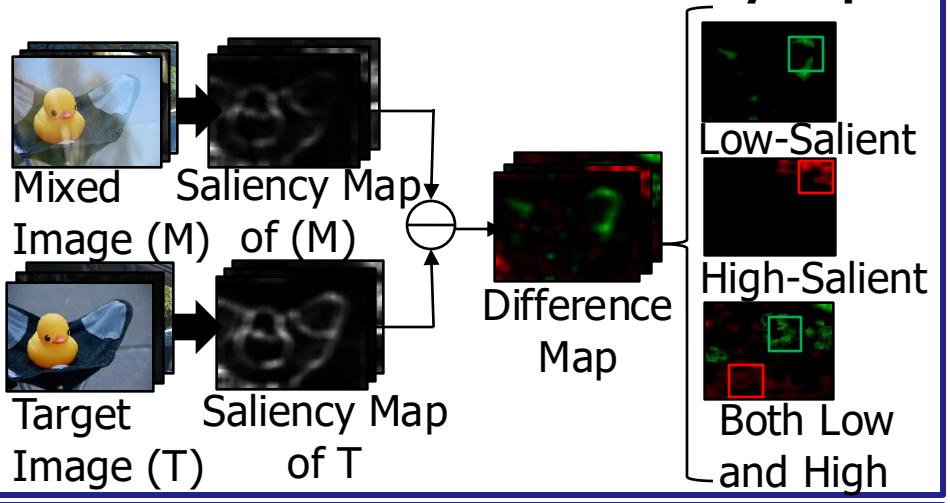
- Existing training datasets lack reflection regions with complex shapes and variety of complex visual characteristics.

Proposals

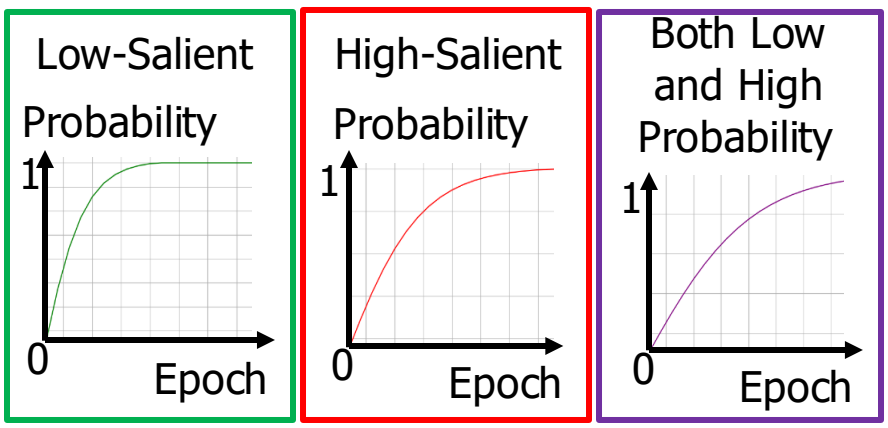
Overall Framework



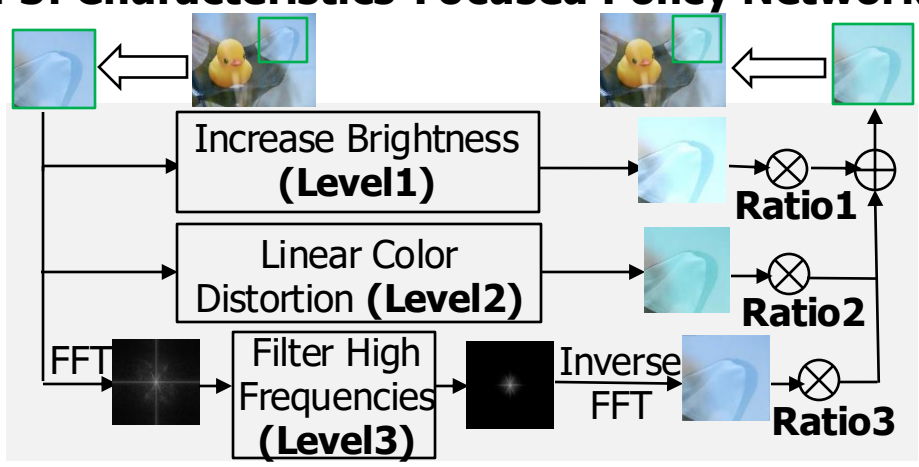
P1: Reflection-Aware Saliency Map



P2: Adaptive Curriculum Learning



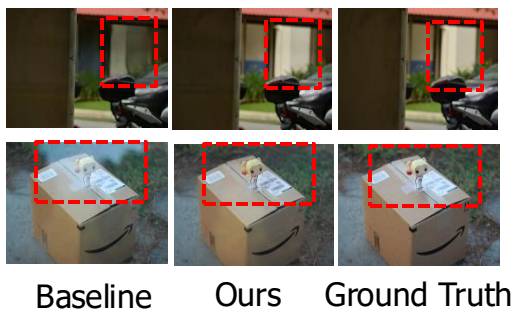
P3: Characteristics-Focused Policy Network



*Parameters(Ratio/Level) from Policy Network

Experiment Results

	Average	
	PSNR/dB	SSIM
Baseline	24.04	0.8802
+P1	24.67	0.8859
+P1+P2	24.96	0.8858
+P1+P2+P3	25.06	0.8871



Baseline | Ours | Ground Truth

Conclusion

- Compared to the IRR model without DA, the IRR with proposed DA method achieves an average improvement of 1.02dB in PSNR and 0.0069 in SSIM.

Graduate School of Information, Production and Systems
Waseda University