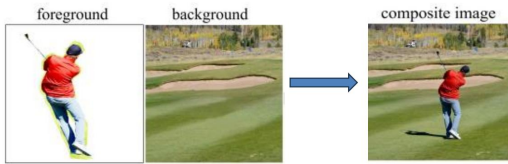


Generative Adversarial Network for Image Harmonization

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Motivation



- Bring in foreground object + background image + mask, output composite image
- Modify lightening, color, contrast, resolution etc.
- Create "natural and real" image

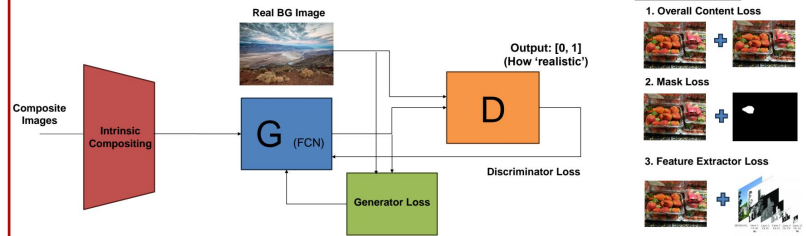
Related Work

- Intrinsic Compositing: Lightening map (lightening); Albedo Domain (color); Limit: Blur; Light contrast
- GAN: Generator vs Discriminator
- HFlickr: Backward adjustment Dataset (9k samples); Real image to composite image, better learning the lightening condition, no shadow generation

References

- [1] Careaga, Miangoleh and Aksoy, Intrinsic Harmonization for Illumination-Aware Compositing, Proc. SIGGRAPH Asia, 2023
 [2] Zhan, Adversarial Image Composition with Auxiliary Illumination, ACCV, 2020
 [3] Cong, DoveNet: Deep Image Harmonization via Domain Verification, CVPR, 2000
 [4] Niu, Making Images Real Again: A Comprehensive Survey on Deep Image Composition, ArXiv, 2021

Architecture



Experimental Results



Composite Image	Intrinsic Compositing		GAN + Content loss		GAN + Mask loss		GAN + Feature loss	
	Composite	Intrinsic Composite	Content Loss	Mask Loss	Feature Loss			
PSNR	37.9	38.6	38.7	37.4	38.7			
LPIPS D (10E-3)	3.21	2.43	2.21	2.52	2.09			

*LPIPS Distance: Measures the human judgement of perceptual and visual dissimilarity between two images; Lower value indicates greater perceptual similarity