Domain gap in image harmonization
Existing approaches learn image harmonization with synthetic composites.
During Training
Synthetic composite image
- Global adjustments
- Same lighting environment
- Perfect boundary
- Consistent shading

Real-world composite image
- Background
- Paste impression
- Different lighting environment
- Imperfect boundary
- Inconsistent shading

Synthetic composite
- Real composite
- Consistent shading

During Testing
Semi-supervised Parametric Real-world Image Harmonization
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Our contributions:
- Bridge the domain gap through training on real composites.
- First approach modeling local effect through novel shading map.
- High-resolution image harmonization with full parametric controls.

High-resolution parametric model
- Color curves and shading map can scale up to any resolution.

Dual-stream training on Artist-retouched dataset
Stream 1: Supervised training on Artist-retouched dataset
Previous dataset
- Unrealistic adjustments
- Only global adjustments

Artistic-retouched dataset
- Realistic human manual image adjustments.
- Editing with both global and local adjustments

Stream 2: Unsupervised training on real composite images
Previous works
- Only on synthetic images
- Not local harmonization

Our approach
- On both synthetic and real composite images.
- Parametric model regularizes GAN training.
- Perform both global and local harmonization.

Image harmonization results

Results of parametric controls