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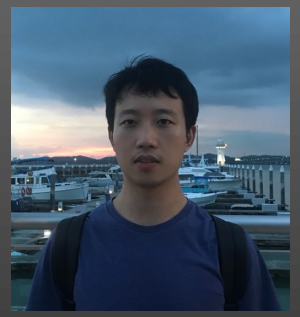
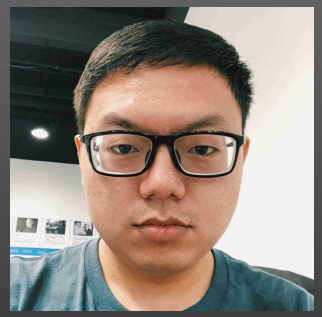
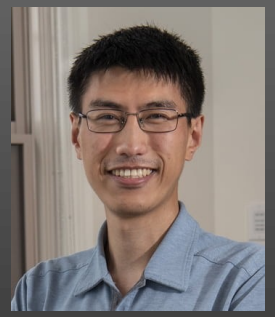
TUE-PM-174

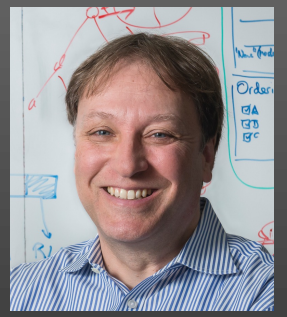
QuantArt: Quantizing Image Style Transfer Towards High Visual Fidelity

Siyu Huang*, Jie An*, Donglai Wei, Jiebo Luo, Hanspeter Pfister

Harvard University, University of Rochester, Boston College

CVPR 2023



A Quick View of This Work

Encoder

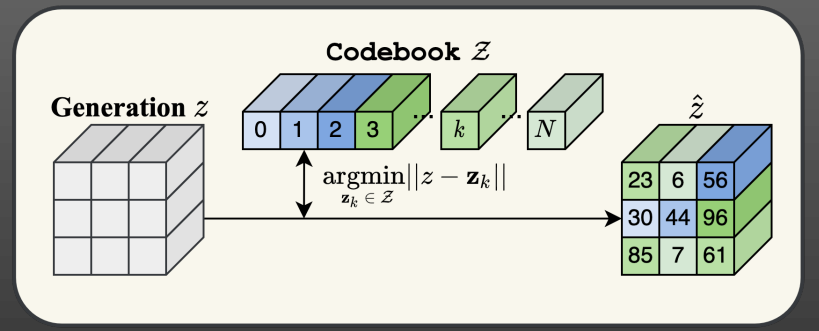
Encoder

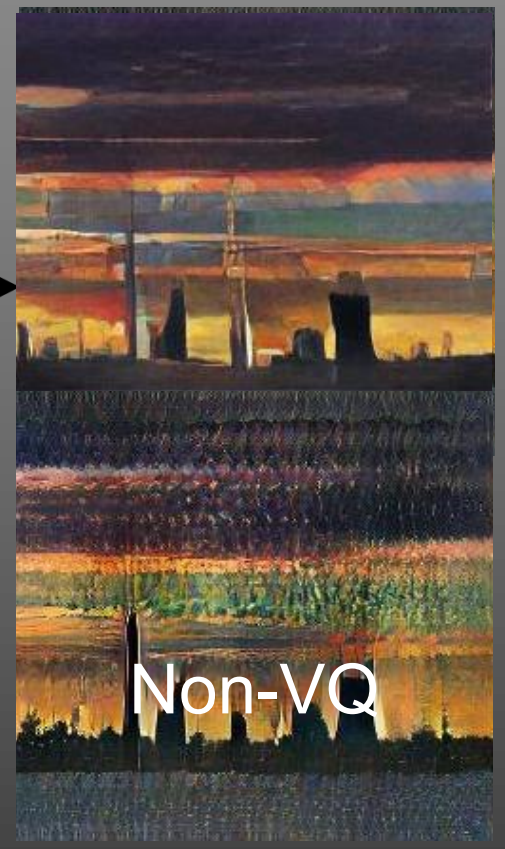
Vector-Quantization

Vector-Quantization

ST Module

Decoder





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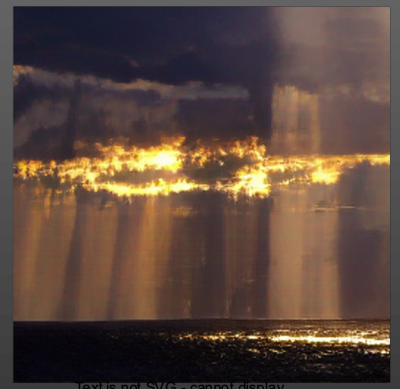
A Quick View of This Work

	Photo → Art		Photo → Photo		Art → Art		Art → Photo
Input							
Reference							
Ours							

Text is not SVG - cannot display

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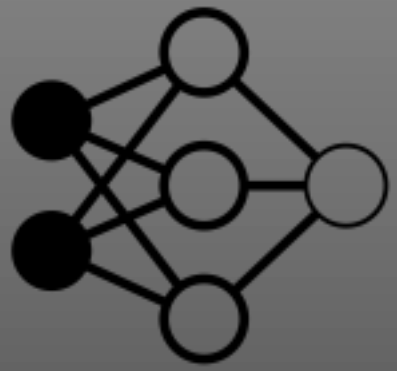
Neural Style Transfer

Content

Style



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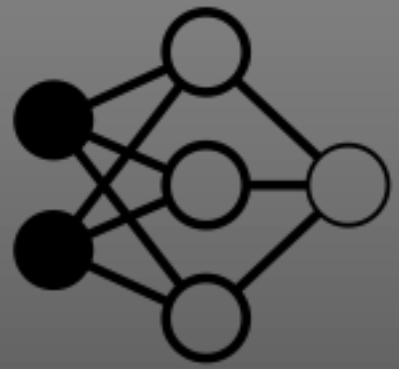
Visual Quality of Neural Style Transfer

Content

Style



Visual Quality

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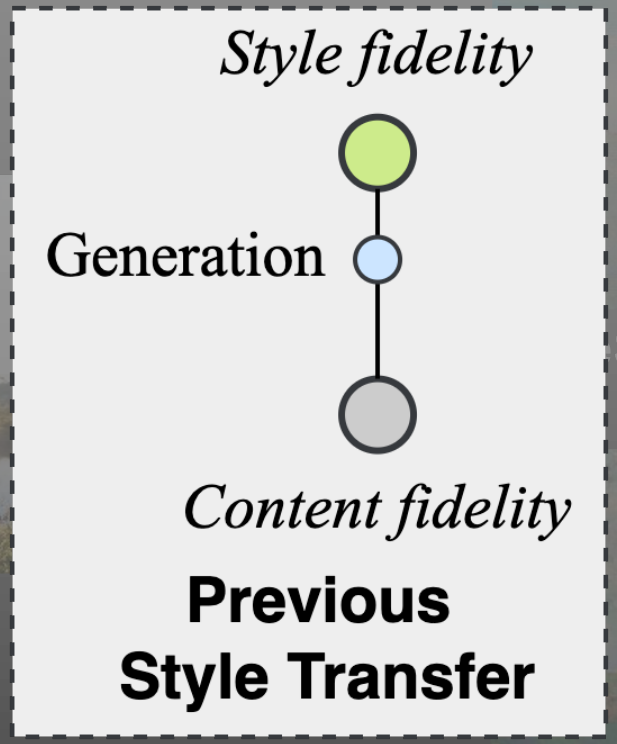
Visual Quality of State-of-the-Art NST

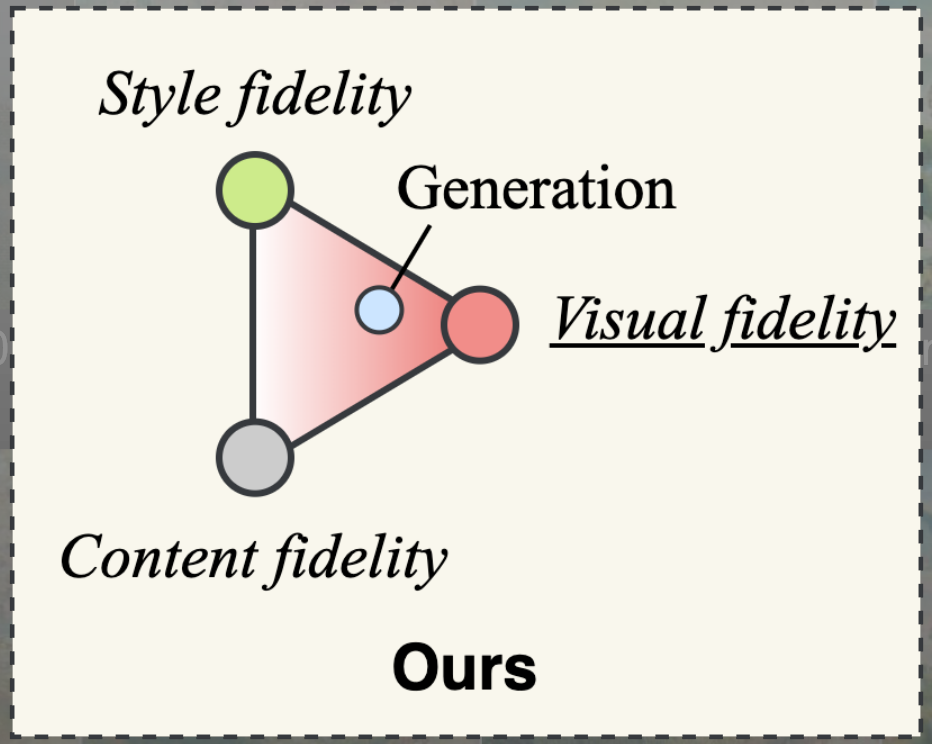
Content Style

StyleSwap (2016) AdaIN (2017) WCT (2017) LinearWCT (2019)

SANet (2019) AdaAttn (2021) ArtFlow (2021) EFDM (2022)

Visual Quality of State-of-the-Art NST





Content

Swap (20

nearWCT (2019)

SANet (2019)

AdaAttn (2021)

ArtFlow (2021)

EFDM (2022)

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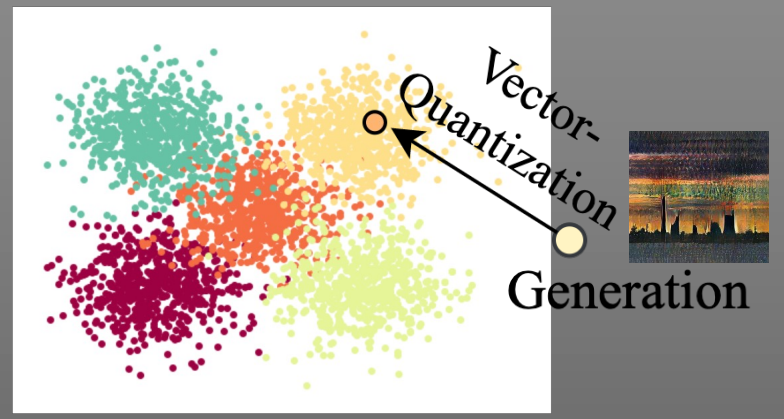
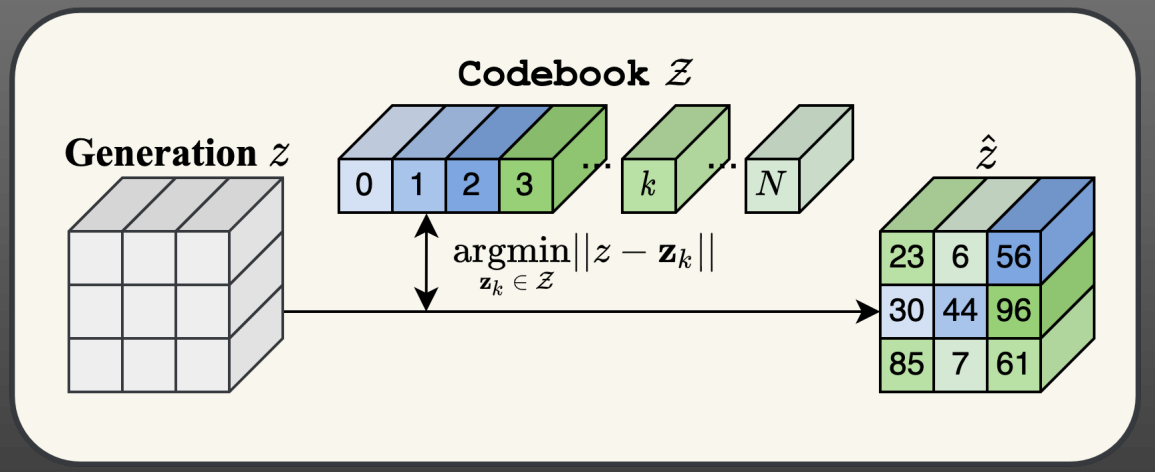
Vector-Quantized Style Representations

Artworks

Style Space





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Quantizing Style Transfer Framework

Content

Style

Encoder

Encoder

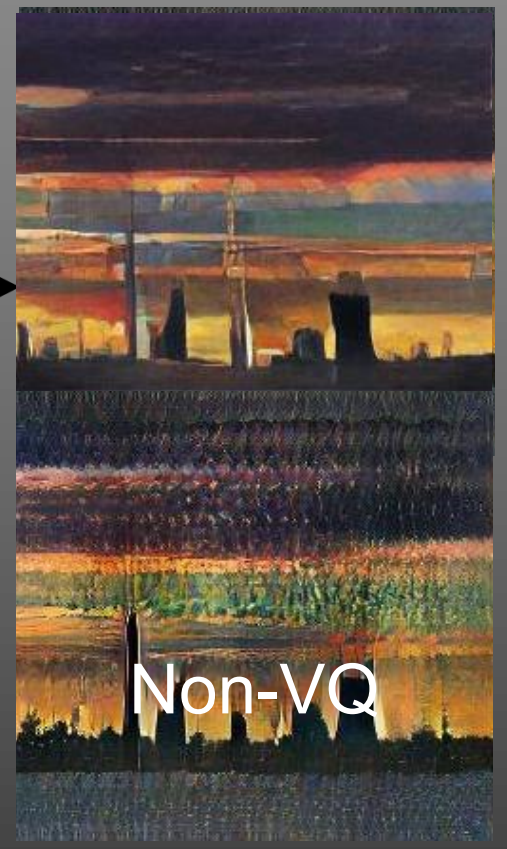
Vector-Quantization

Vector-Quantization

ST Module

Decoder

Generation



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Artistic Turing Test

Which one is a real artwork?

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Artistic Turing Test

Photo

Our Generation

Real Artwork

Rembrandt, Hendrickje Stoffels', 1650

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Artistic Turing Test

Which one is a real artwork?

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Artistic Turing Test

Real Artwork

Jacek Malczewski, 'Przekazanie palety', 1922

Our Generation

Photo

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See More

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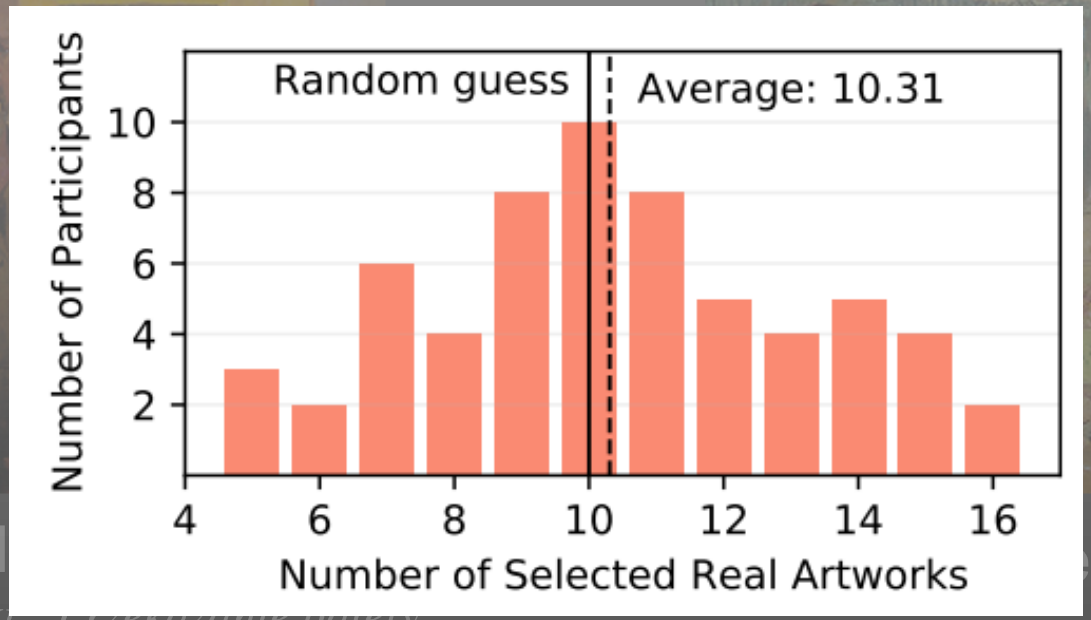
Artistic Turing Test



Real

Jacek Malczewski, "Przekazanie palety", 1922

eration

Photo

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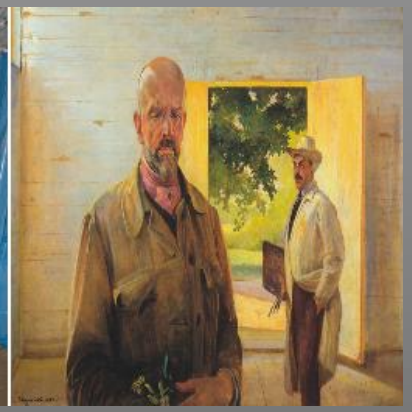
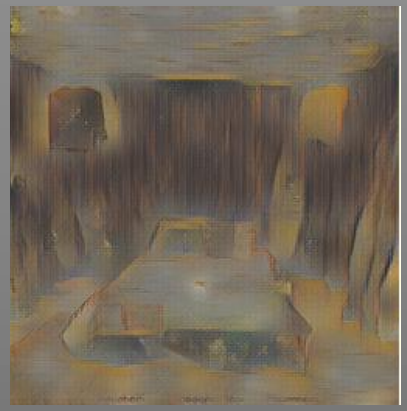
Comparison to State-of-the-Arts

Content


Style


StyleSwap (2016)

AdaIN (2017)

WCT (2017)

LinearWCT (2019)

Ours

SANet (2019)

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ArtFlow (2021)

EFDM (2022)

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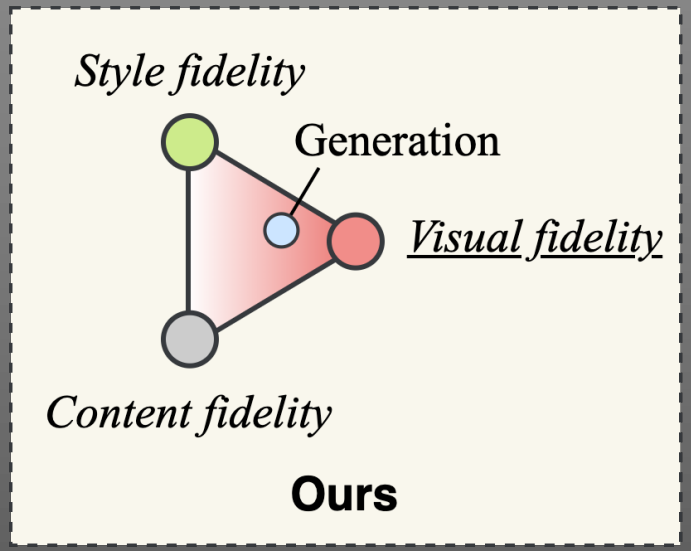
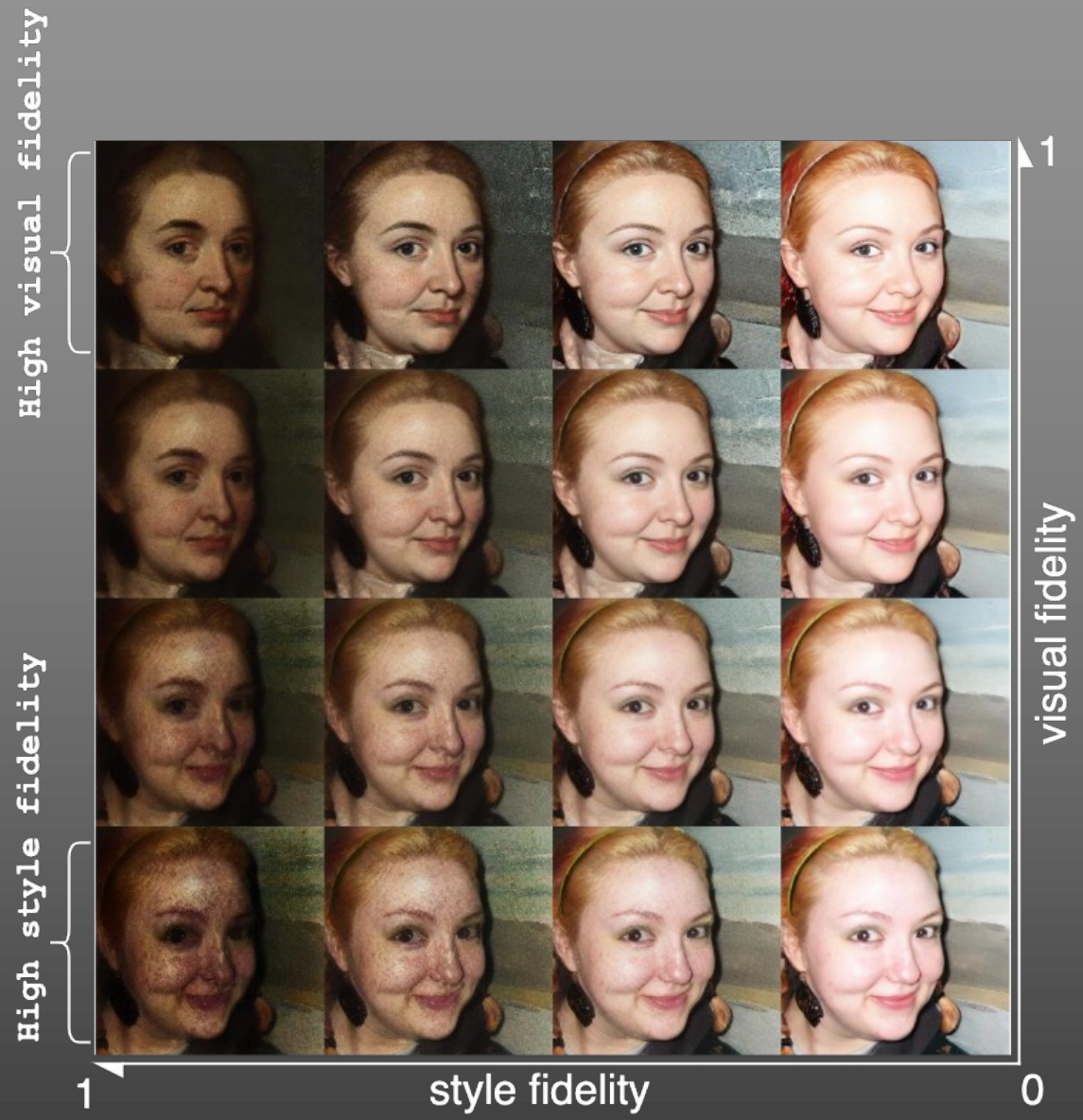
Trade-Off Between Fidelity Terms





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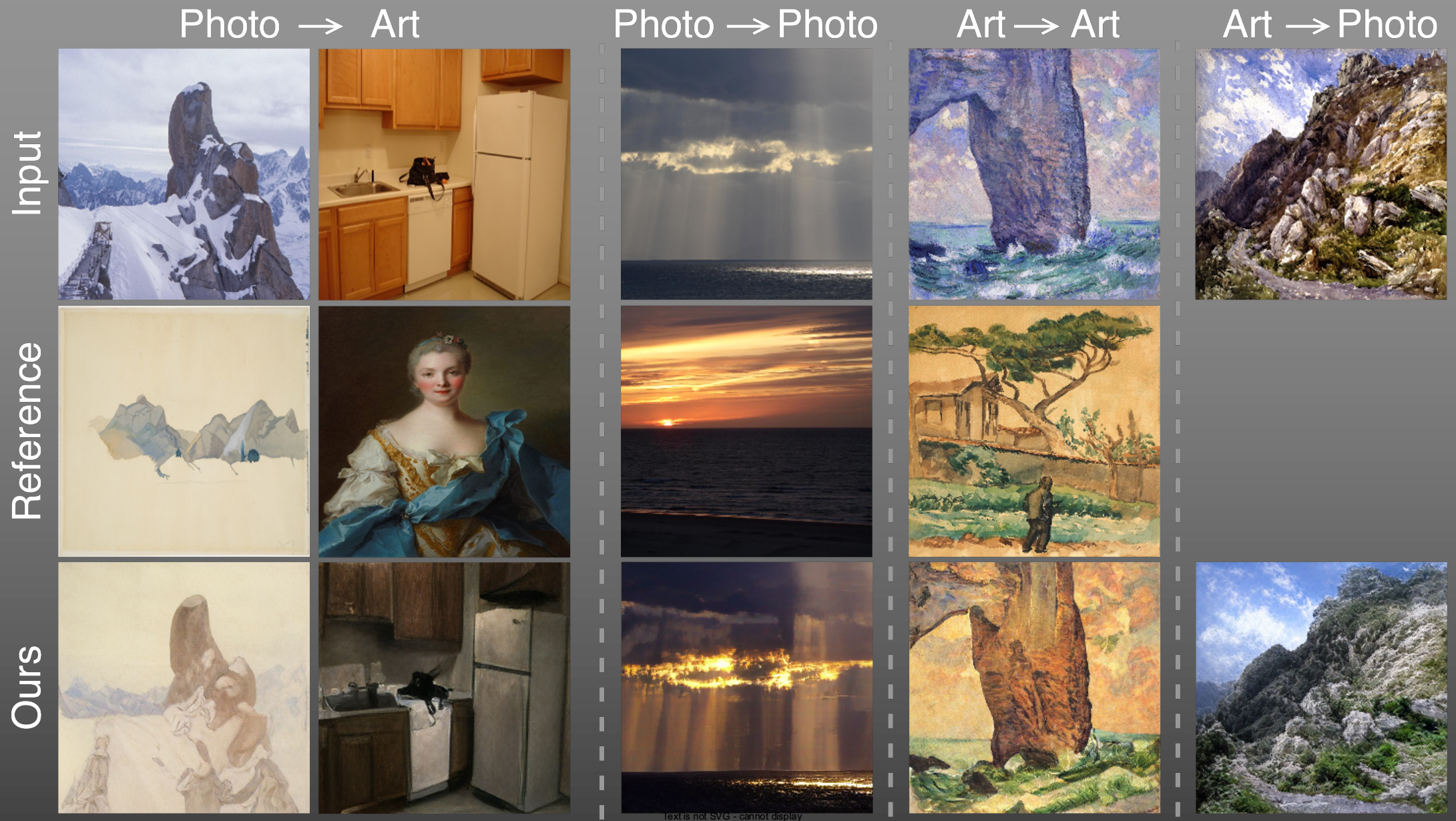

Generalization to More Style Transfer Problems