# Arbitrary Style Transfer in Real-time with Adaptive Instance Normalization

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Based on the paper:
Xun Huang, Serge Belongie; Arbitrary Style Transfer in Real-time with Adaptive Instance Normalization (ICCV 2017)

# Evolution of Style Transfer

**A Neural Algorithm of Artistic Style (Gatys et, al)**

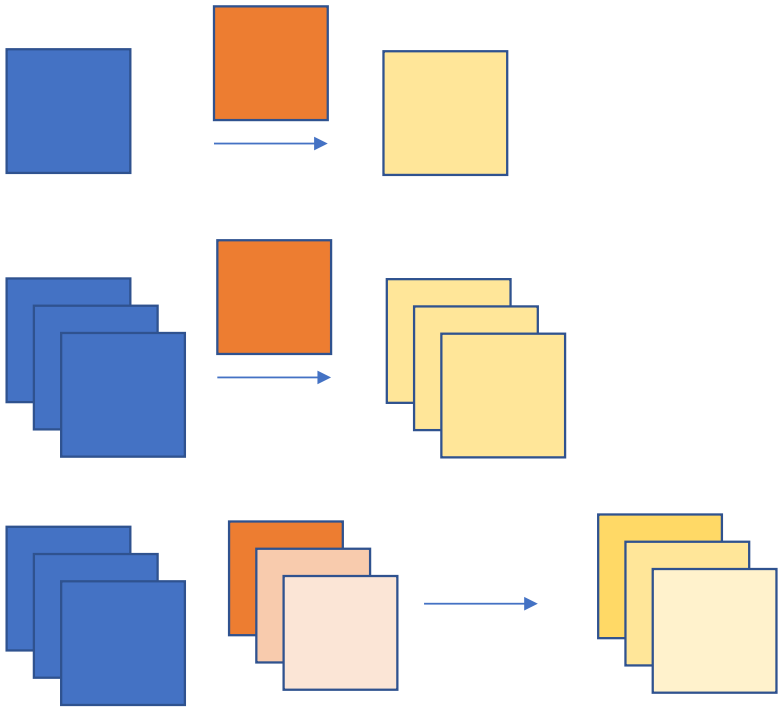
One image, One Style
per trained model

**Perceptual Losses for Real-Time Style Transfer and Super-Resolution (Johnson et, al)**

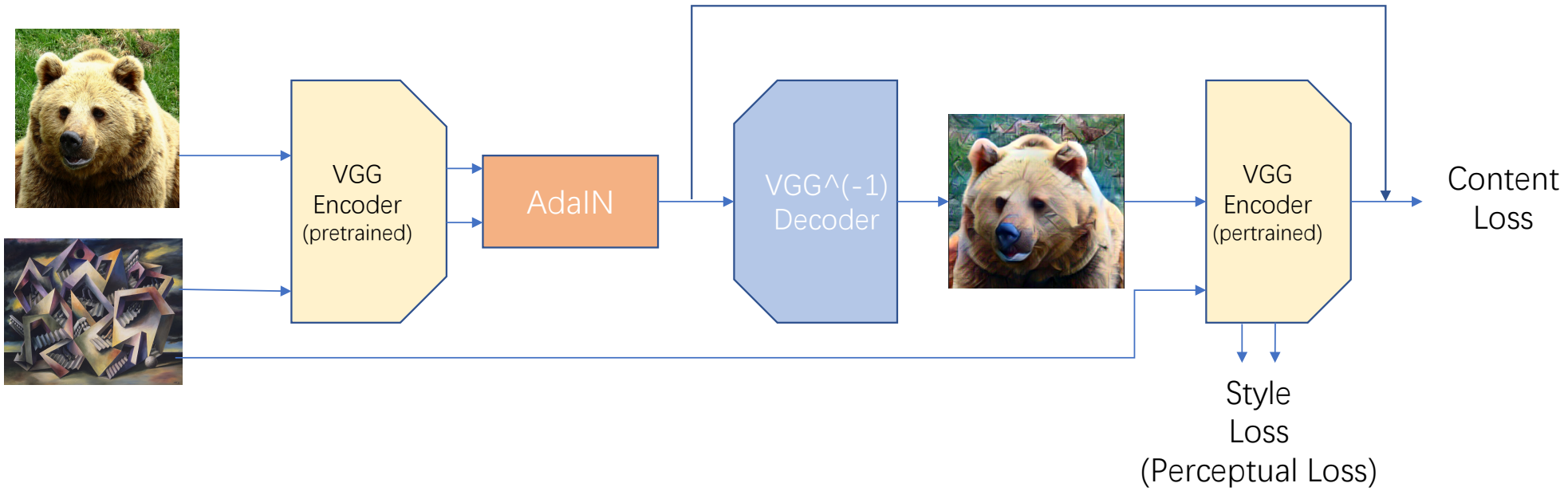
Multiple images, One Style
per trained model

**Arbitrary Style Transfer in Real-time with Adaptive Instance Normalization (Huang et, al)**

Multiple images, Multiple Styles
per trained model



# Model




Xun Huang, Serge Belongie; Arbitrary Style Transfer in Real-time with Adaptive Instance Normalization (ICCV 2017)

# Adaptive Instance Normalization (AdaIN)

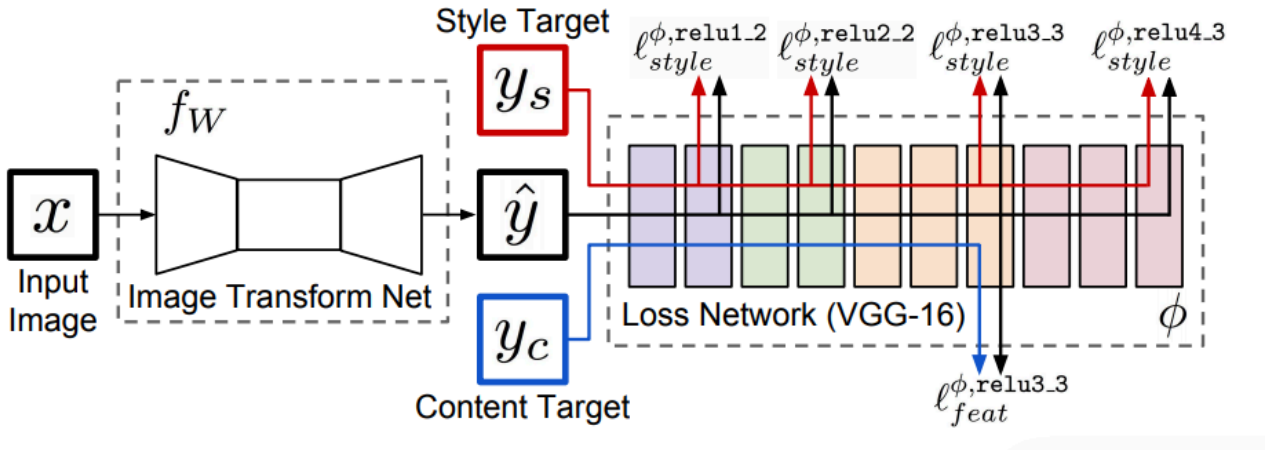
- Align the channel-wise mean and variance of content feature x to style feature y.

$$\mathbf{AdaIN}(x, y) = \sigma(y)\left(\frac{x - \mu(x)}{\sigma(x)}\right) + \mu(y)$$

Xun Huang, Serge Belongie; Arbitrary Style Transfer in Real-time with Adaptive Instance Normalization (ICCV 2017)

# Perceptual Loss

- Calculate loss from the hidden layers outputs of a network.




J. Johnson et, al; Perceptual Losses for Real-Time Style Transfer and Super-Resolution

# Result (all in test set)