

# Live Style Transfer

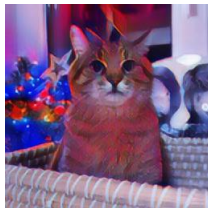
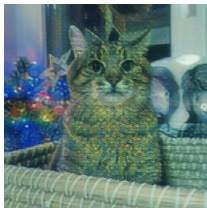
## Applied Deep Learning Project

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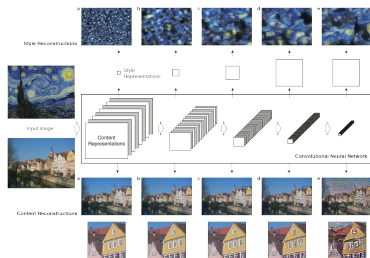
IPP - M2DS

30 mars 2022

# Style Transfer



# A Neural Algorithm of Artistic Style<sup>1</sup>



► VGG16

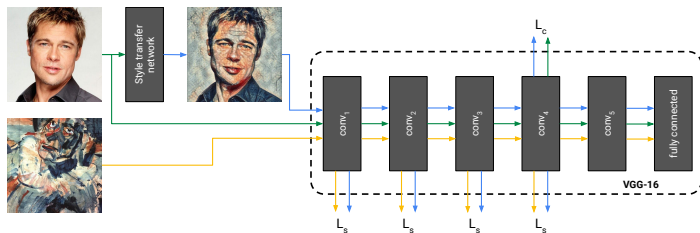
► Style and content layers

$$\mathcal{L}_{tot} = \lambda_c \mathcal{L}_c + \lambda_s \mathcal{L}_s \text{ with : } \mathcal{L}_c = \frac{1}{2} \sum_{i,j} \left( F_{ij}^l - P_{ij}^l \right)^2$$

$$\mathcal{L}_s = \sum_{l=0}^L \left( w_l \frac{1}{4N_l^2 M_l^2} \sum_{i,j} \left( G_{ij}^l - A_{ij}^l \right)^2 \right)$$

<sup>1</sup>Leon A. Gatys, Alexander S. Ecker, and Matthias Bethge. "A Neural Algorithm of Artistic Style". In: (2015). arXiv: 1508.06576.

# A Learned Representation For Artistic Style<sup>2</sup>



$$\mathcal{L}_{tot} = \lambda_c \mathcal{L}_c(T(c)) + \lambda_s \mathcal{L}_s(T(c))$$

- N-styles training
- Conditional Instance Normalization

<sup>2</sup>Vincent Dumoulin, Jonathon Shlens, and Manjunath Kudlur. "A Learned Representation For Artistic Style". In: (2017). arXiv: [1610.07629](https://arxiv.org/abs/1610.07629).

# LiveCam Style Transfer

► [GitHub](#)



Dumoulin, Vincent, Jonathon Shlens, and Manjunath Kudlur. “A Learned Representation For Artistic Style”. In: (2017). arXiv: [1610.07629](https://arxiv.org/abs/1610.07629).



Gatys, Leon A., Alexander S. Ecker, and Matthias Bethge. “A Neural Algorithm of Artistic Style”. In: (2015). arXiv: [1508.06576](https://arxiv.org/abs/1508.06576).



— . “Image Style Transfer Using Convolutional Neural Networks”. In: (2016). DOI: [10.1109/CVPR.2016.265](https://doi.org/10.1109/CVPR.2016.265).



Hervind, Philipe. *yolov3-in-colab*. URL: <https://github.com/vindruid/yolov3-in-colab.git>.



Jing, Yongcheng et al. “Neural Style Transfer: A Review”. In: (2017). arXiv: [1705.04058](https://arxiv.org/abs/1705.04058).



Wong, Ryan. *Real-time-multi-style-transfer*. URL: <https://github.com/ryanwongsa/Real-time-multi-style-transfer.git>.