

CS 523: Multimedia Systems

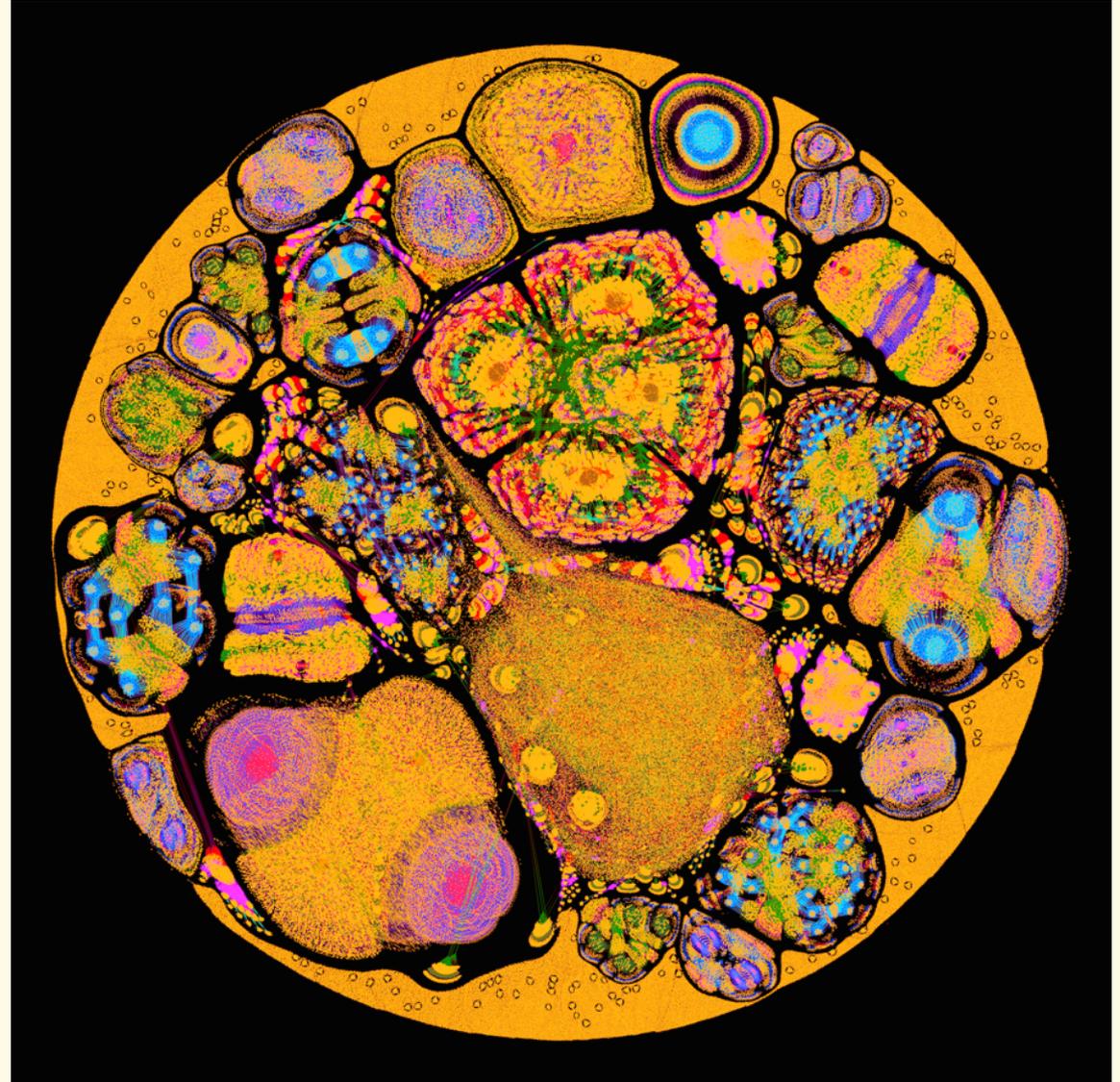
Angus Forbes

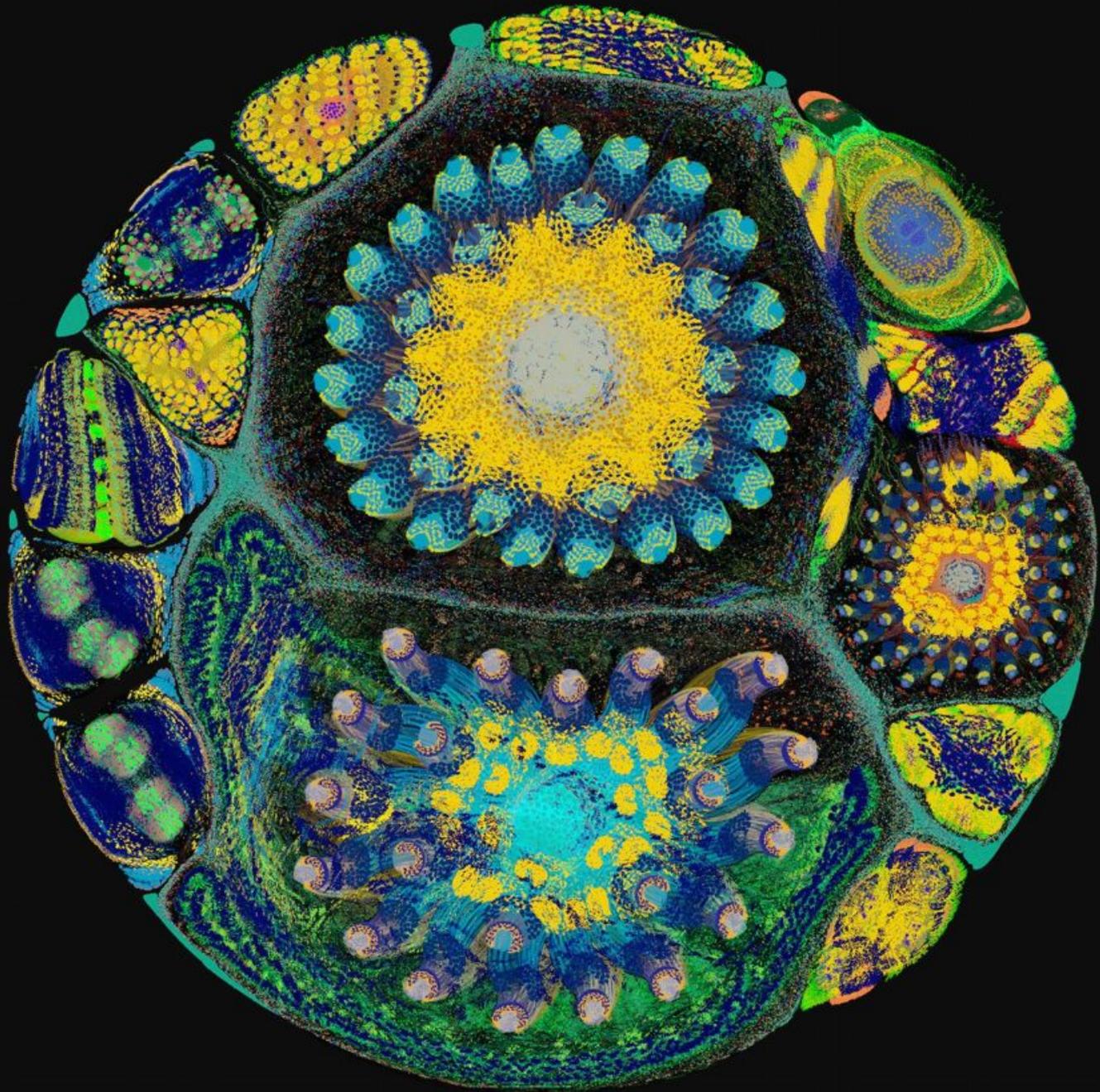
creativecommons.evl.uic.edu/courses/cs523

Graphcore "Brain scans"

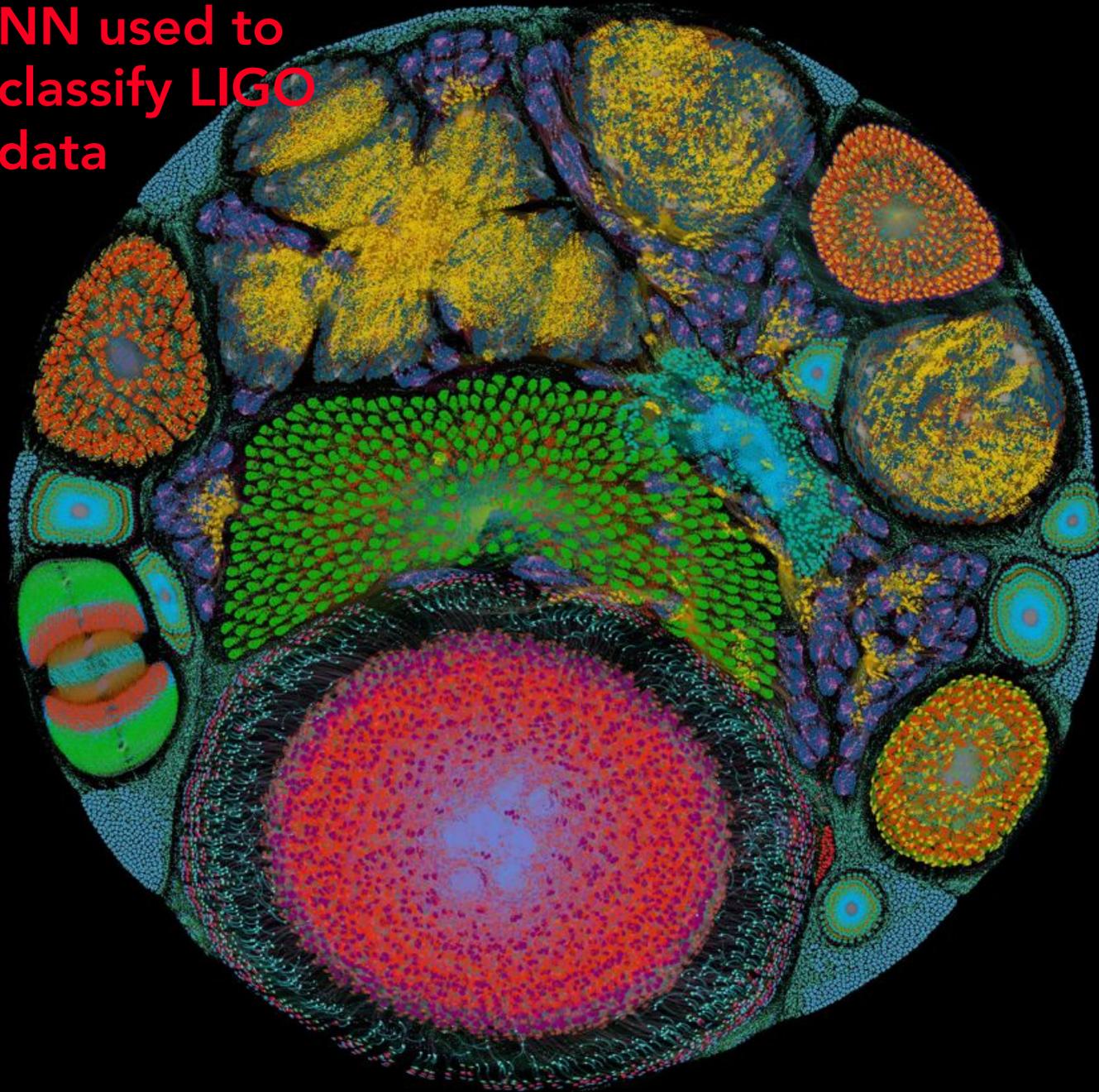
<http://www.wired.co.uk/gallery/machine-learning-graphcore-pictures-inside-ai>

- Graphs are colored to highlight the density of computation
- Most images represent training or classification using Microsoft's ResNet

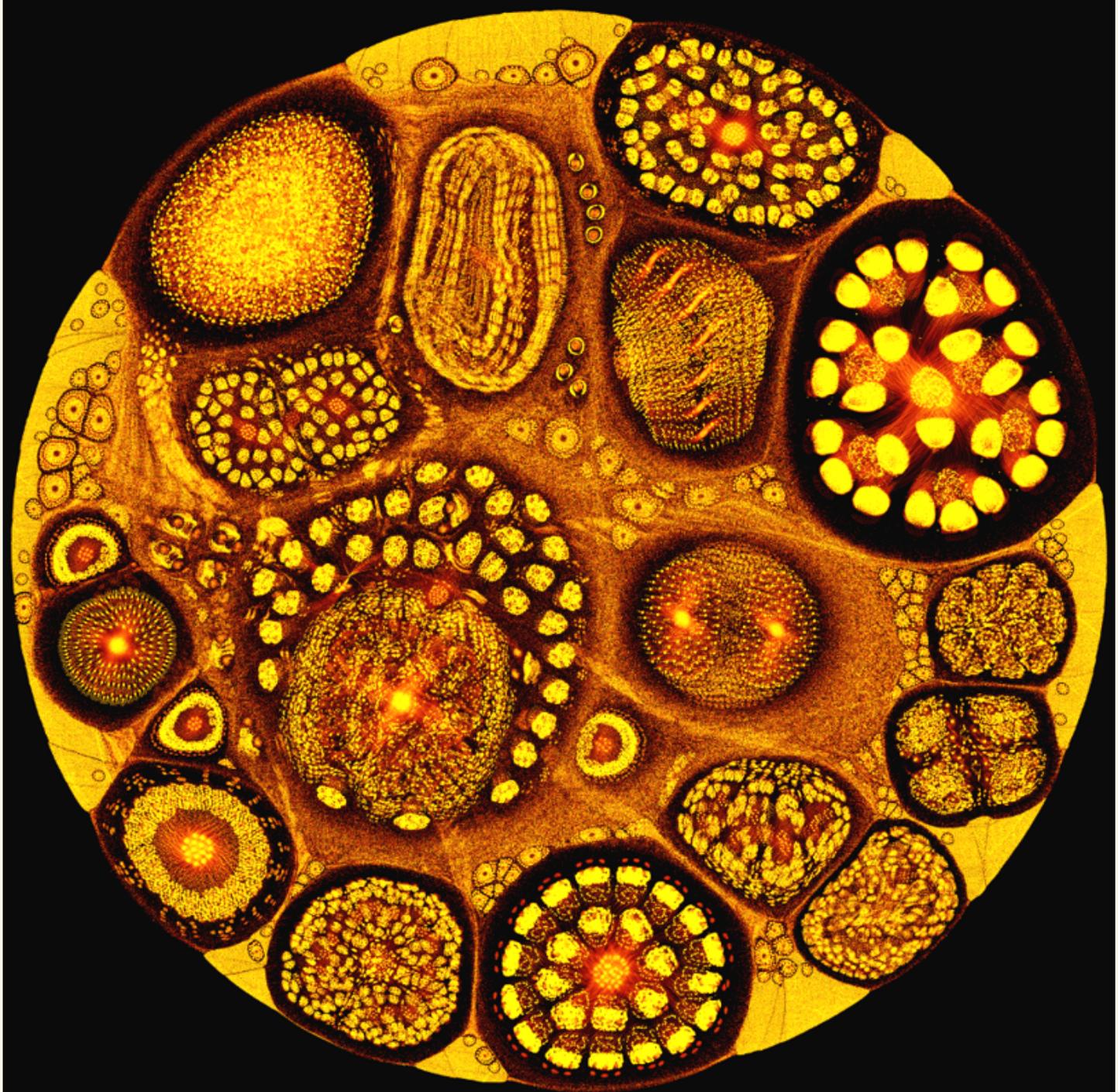




**NN used to
classify LIGO
data**







Anton Woll Söder, "Reaction"

<http://www.thisiscolossal.com/2017/02/reaction-an-experimental-particle-animation-by-anton-woll-soder/>



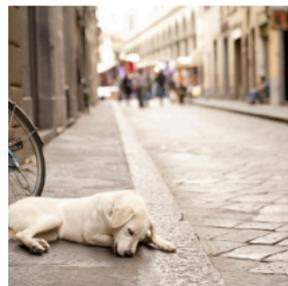
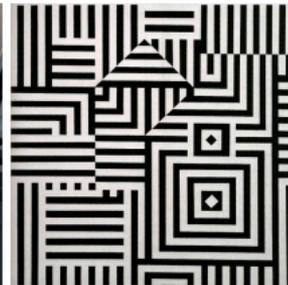
AI Duet

<https://aiexperiments.withgoogle.com/ai-duet>



Arbitrary Style Transfer In Real-time

<https://openreview.net/pdf?id=B1fUVMzKg>



Content

Style

Output

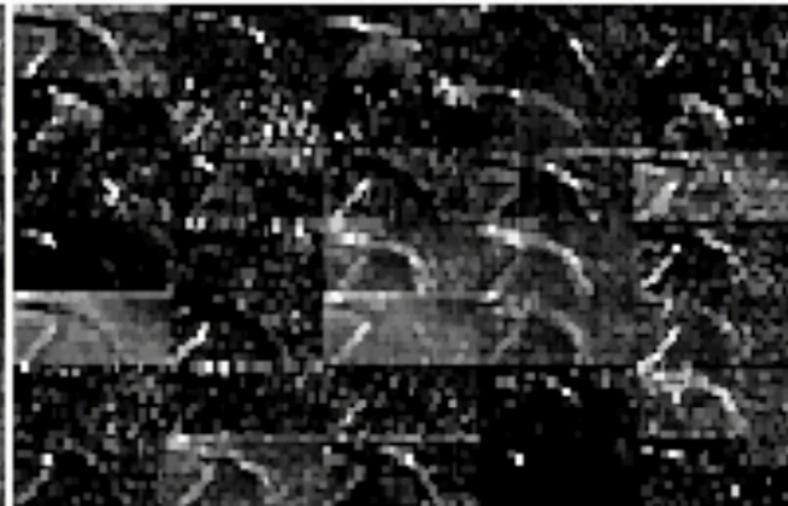
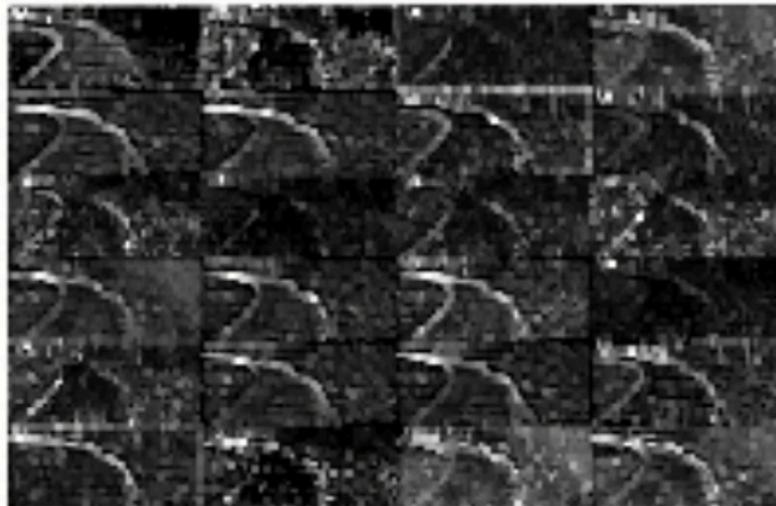
Content

Style

Output

End to End Learning for Self-Driving Cars, Bojarski, et al. 2016

<https://arxiv.org/pdf/1604.07316.pdf>



Neural Network Learns to Select Potential Anticancer Drugs

<http://www.dddmag.com/news/2017/02/neural-network-learns-select-potential-anticancer-drugs>

“By using Generative Adversarial Networks (GANs) developed and trained to “invent” new molecular structures, there may soon be a dramatic reduction in the time and cost of searching for substances with potential medicinal properties.

GANs are very much the frontline of neuroscience. It is quite clear that they can be used for a much broader variety of tasks than the simple generation of images and music. We tried out this approach with bioinformatics and obtained great results”

Automatic Handgun Detection, Olmos, et al. 2017

<https://arxiv.org/abs/1702.05147>



Photo Filter Recommendation, Sun, et al. 2016

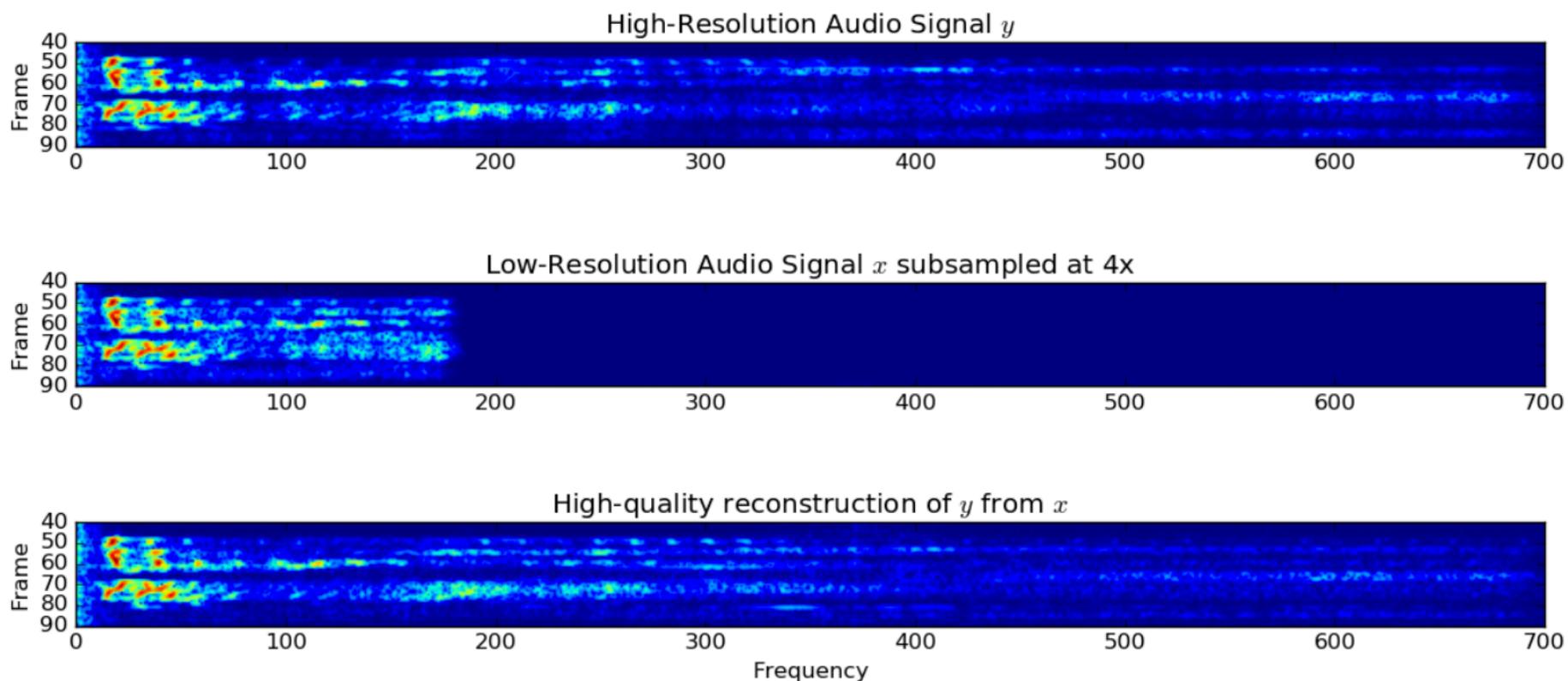
<https://arxiv.org/abs/1608.05339>

Top-3 Ranked Filtered Images

Rank-1	 Inkwell	 Mayfair	 Hefe	 Mayfair	 Mayfair
Rank-2	 Hefe	 Hefe	 Earlybird	 Hefe	 Hefe
Rank-3	 XProII	 Lofi	 Gotham	 XProII	 XProII

Audio Super Resolution, Kuleshov, et al. 2017

<https://openreview.net/forum?id=S1gNakBFx¬Id=S1gNakBFx>



Visual Similarity

<https://artsexperiments.withgoogle.com/xdegrees>



Daniel Chester French, 1922
Benediction

Amon Carter
Museum of
American Art



Frederic Remington, 1903
The Mountain Man

Amon Carter
Museum of
American Art



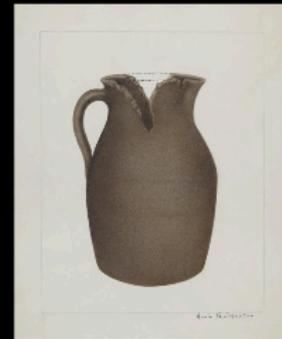
Unknown
Woman's Bonnet
Los Angeles County
Museum of Art



Hanna Kośmicka
"Wilk" Wool hand
puppet
The National
Museum in Warsaw



Nicholas Amantea
Cream Pitcher
National Gallery of
Art, Washington DC



Annie B. Johnston
Stoneware Jar
National Gallery of Art,
Washington DC

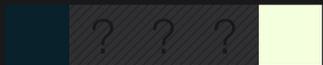


Annie B. Johnston
Stoneware Jar
National Gallery of Art,
Washington DC

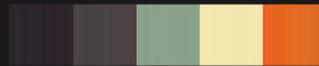
Color Palette GAN

<http://colormind.io/>

Input



Generated



Ground truth



Deep Kern

<https://patrickgadd.github.io/feel-the-kern/>



AV wa

No kerning

This image shows the text 'AV wa' in a black serif font. The letters 'A' and 'V' are positioned such that they appear to be touching or overlapping, with no visible gap between them. A vertical blue line is drawn at the right edge of the 'A' and another at the left edge of the 'w', highlighting the lack of space between them. The text 'No kerning' is written in blue below the letters.



AV wa

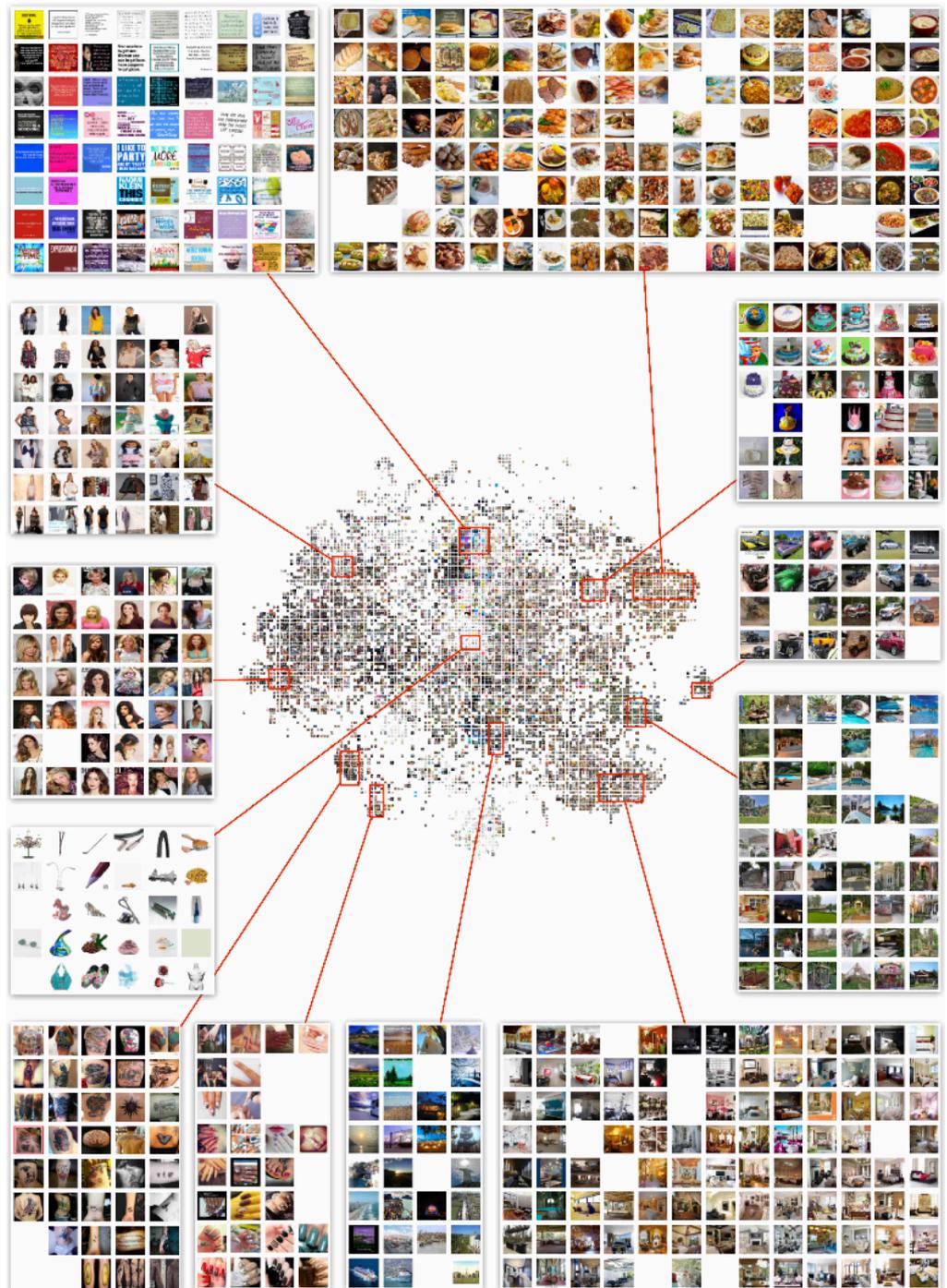
Kerning applied

This image shows the same text 'AV wa' in a black serif font, but with kerning applied. There is a clear, consistent gap between the 'A' and the 'V', and between the 'w' and the 'a'. A vertical blue line is drawn at the right edge of the 'A' and another at the left edge of the 'w', showing the space between them. The text 'Kerning applied' is written in blue below the letters.

Visual Discovery at Pinterest

Zhai et al., 2017

[https://arxiv.org/
abs/1702.04680](https://arxiv.org/abs/1702.04680)



Next Week

- Project 2 presentations!
- Project documentation:
 - GitHub, video, installation instructions, etc.