Interactive Canvas Style Transfer

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INTRO

Our webapp applies style-transfer ‘brushes’ onto an image, allowing users to interact with deep convolutional neural networks to co-create customized art. This gives us new perspective on the learned image-to-image ‘style function’, supporting human intuition for its expressive range.

STYLE TRANSFER

All *style models* used in this application were produced from running a single content image input through a pre-trained 19-layer feature extractor network (VGG-19). Fast VGG architectures for deep style transfer do not train on the content image, resulting in a style transfer network which works even on unseen images. The ml5.js implementation of this architecture underlies our frontend supporting a casual creator experience.

DISCUSSION

We sought to understand the role of artistic vision in art creation. Does the artist’s intent create the content layout, or does the layout emerge according to the artist’s personal style? Thinking of style transfer inherently separates the creative process for creating an art piece into a content layout (an entire image), and an image-to-image function mimicking an existing style. The traditional roles of artist and curator are intertwined.

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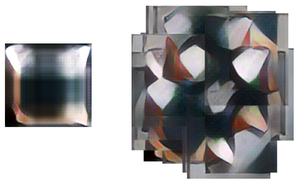
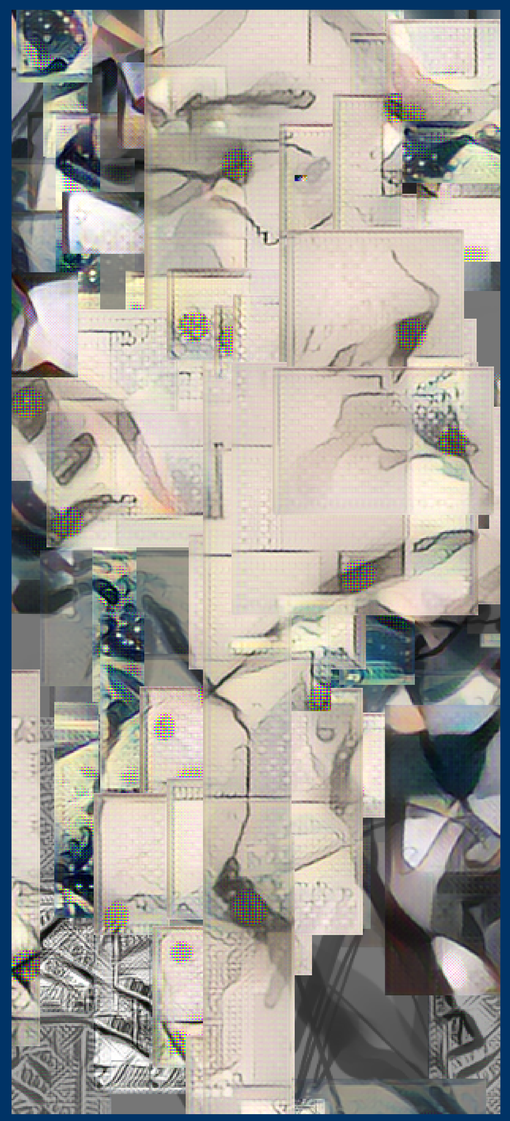
Paint **styles** onto your pictures with **interactive brushes**, based on visual motifs from **data art**.

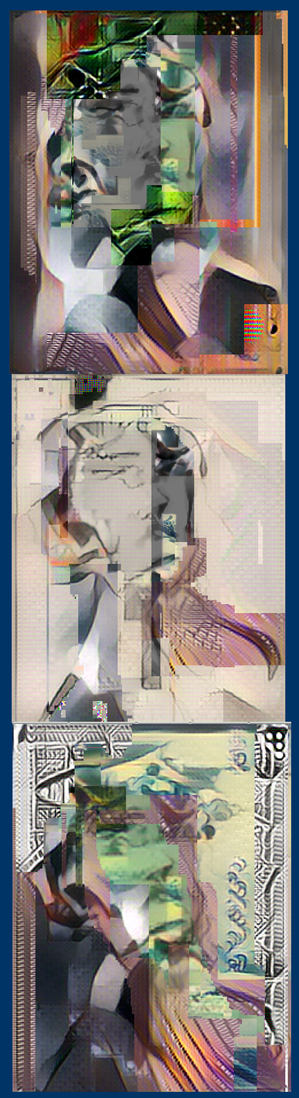
↓



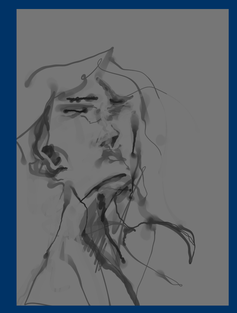
Udnie
Francis Picabia, 1913.
Style model as seen by VGG-19.



Stamps



Stamps + Markers

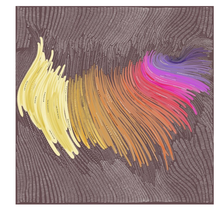


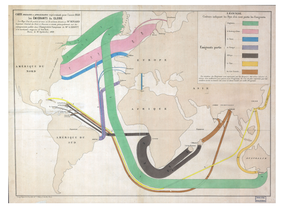
Base Image

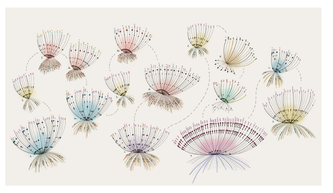
PAINTER & DATAVIS BRUSHES

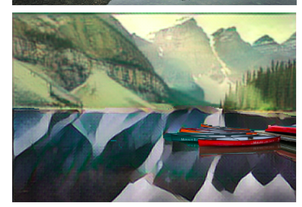
We used pre-trained brushes from ml5.js, a Javascript library for web-based machine learning projects.

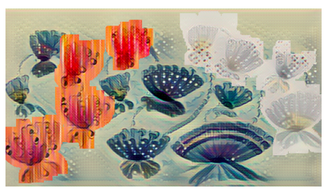
We also created custom brushes using famous data visualizations by Giorgia Lupi and Charles Minard.











MAGIC MARKERS

The Magic Markers application uses natural brush interactions so that users can apply style of their choice through intuitive selection and dragging.

Brush selections on the canvas can be dragged or reshaped to reveal (‘paint’) the style applied to the user’s entire content image. Intermediate results can be styled in turn, producing layered results.

COMPOSITING STAMPS

The Compositing Stamps app applies styles in real-time to user-selected slices of an image, enabling their ‘collage’ to diagnose boundary features and other artifacts of the content-sensitive brush.