Classifying Art Periods With Neural Networks

Caroline Shi

Objective

- How accurately can we predict a painting's art period using neural networks?

- Distinguishing between art periods that are similar to each other vs very disparate periods

Data, Tools

- Grabbing data from Kaggle
  - Balanced classes
- Which art periods to choose?
  - 1,000 → 2,000 per class

- Using Google Colab

Art History 101

Neoclassicism
18–19th c.

Impressionism
late 19th c.

Surrealism
early 20th c.

Binary Model

Surrealism vs Neoclassicism

NN Model	Accuracy
CNN	0.720

MobileNet	0.925

Changing Art Periods

Image Augmentation

Dropout

Transfer Learning

3 Class Model

Surrealism vs Neoclassicism vs Impressionism

NN Model	Accuracy
CNN	0.626
Feature Extraction	0.763

More Data	0.805

Predictions

Actual: Impressionism
Predicted: Impressionism

Actual: Neoclassicism
Predicted: Neoclassicism

Actual: Surrealism
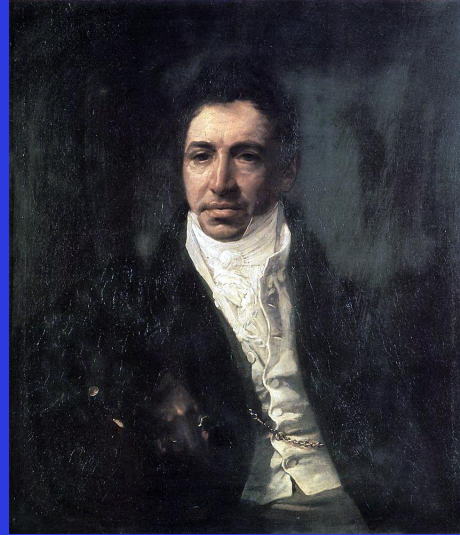Predicted: Neoclassicism

5 Class Model

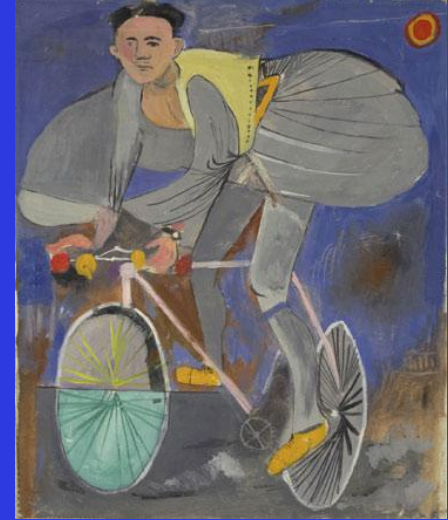VGG16 with feature extraction
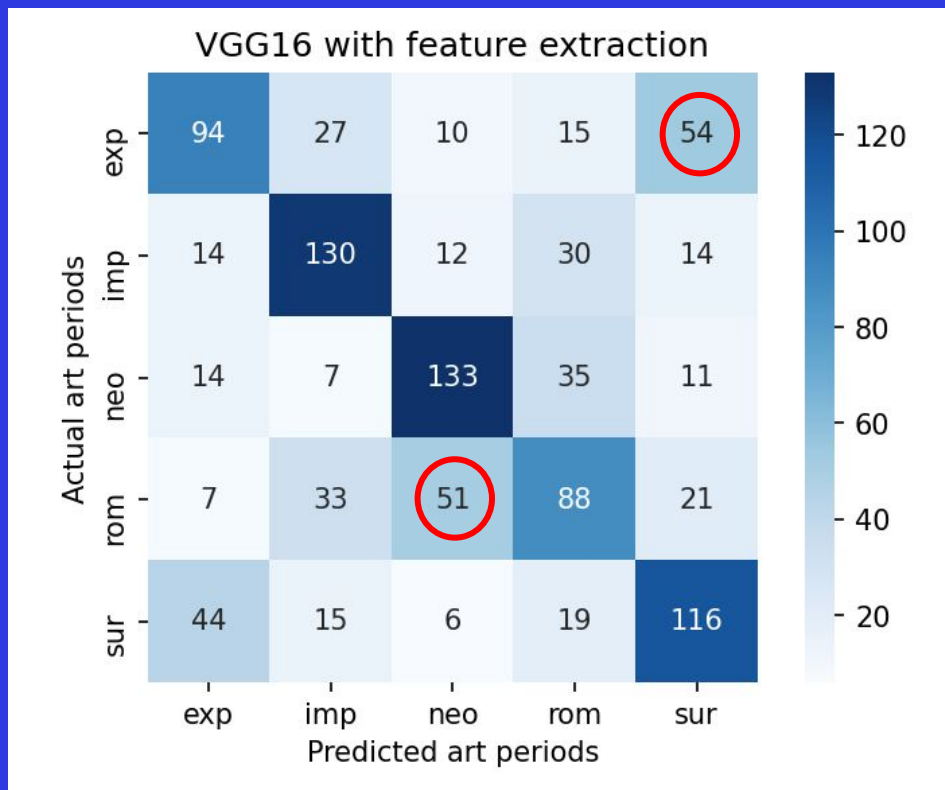
| Accuracy | 0.561 |

Looking at Misclassifications

Actual: Romanticism
Predicted: Neoclassicism

Actual: Romanticism
Predicted: Neoclassicism

Actual: Expressionism
Predicted: Surrealism

Future Work

- Tuning 5 class model
- Adding in more art periods
- Creating an app to classify art periods
  - Output of 2 art periods?