Classifying Art Periods With Neural Networks

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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
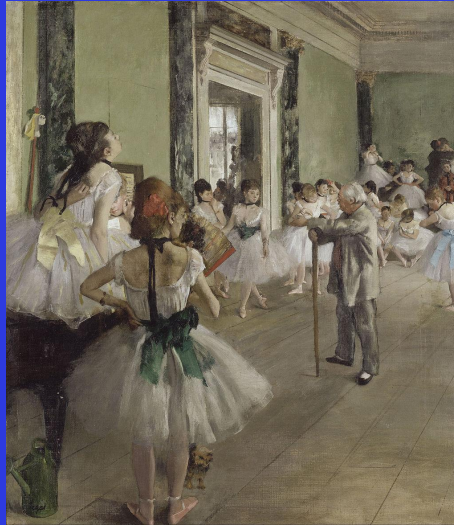
Data, Tools

- 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
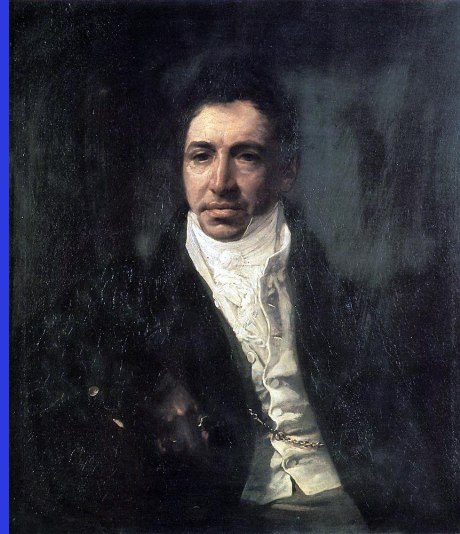Predicted: Neoclassicism

5 Class Model

VGG16 with feature extraction
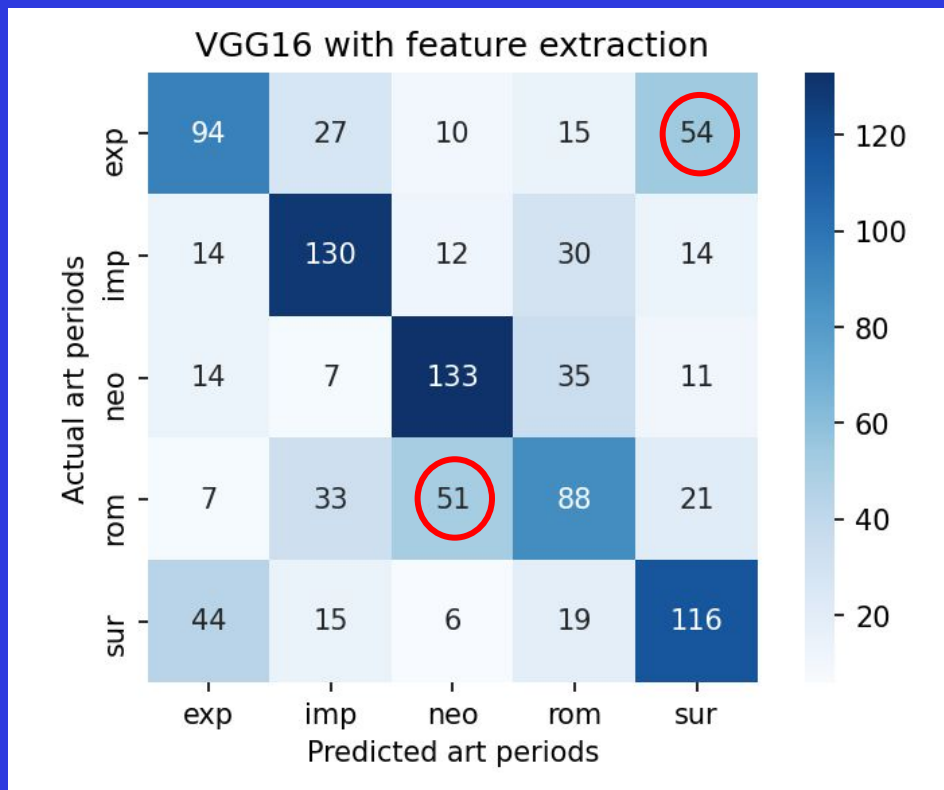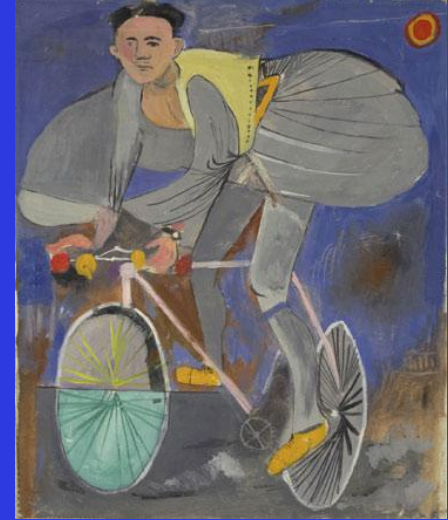
| Accuracy | 0.561 |

Looking at Misclassifications

Actual: Romanticism
Predicted: Neoclassicism

Actual: Romanticism
Predicted: Neoclassicism

Actual: Expressionism
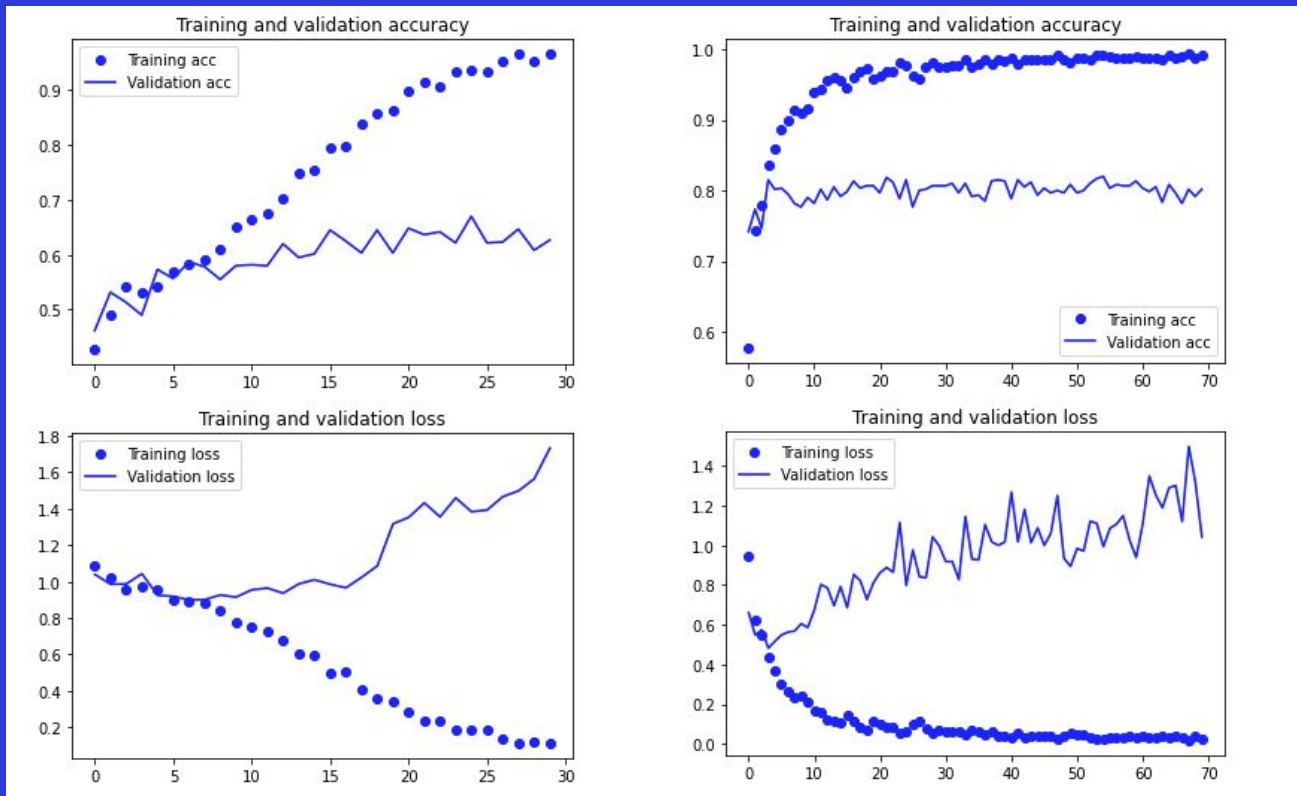Predicted: Surrealism

Future Work

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

Appendix

3 class CNN vs transfer learning

Appendix 2

VGG16 with feature extractions confusion matrix