MAIS 202 Deliverable 1: Who's the Artist?

Agnes Totschnig

1 Dataset

As an art lover I enjoy wandering through museums and contemplating artworks. To help me with the difficult task of recognizing the artist behind a painting, I decided to work on an artificial intelligence that can predict the artist. I will be using the collection of paintings of 50 influential artists available on kaggle under the following link: `https://www.kaggle.com/ikarus777/best-artworks-of-all-time`. The 8355 paintings were scraped from the website `artchallenge.ru`. If time permits, I would like to look for more labeled artwork to extend this database and include other artists.

2 Methodology

2.1 Data Preprocessing

The dataset contains the paintings sorted by artist. Some additional information as the genre and the nationality are provided for each artist. The images have been resized to allow for faster processing and training of the model. I noticed a certain imbalance between the classes, as there are 877 paintings by Vincent van Gogh, but only 24 paintings by Jackson Pollock. Thus I think it would be advisable to look for more paintings from weaker classes, or to leave them out, as the model would perform poorly on them.

2.2 Machine Learning Model

The best suited machine learning algorithm for this problem seems to be a convolutional neural network, as this is a common approach for visual imagery problems. More specifically Residual Neural Networks (ResNet) seem to perform well on this type of classification task.

2.3 Final Conceptualization

To showcase this model, I will build a simple landing-page webapp, where one can upload an image of an artwork and see the predicted artist with a short biography. If time permits, I would like to write a mobile app so that one can conveniently use a smartphone to take a picture of a painting.

References

1. *Best Artworks of All Time* database from `https://www.kaggle.com/ikarus777/best-artworks-of-all-time`

2. *Art Challenge - A Quiz Game of Famous Painters* by `artchallenge.ru`

3. Nitin Viswanathan, *Artist Identification with Convolutional Neural Networks*