Motivation

"Art, n. This word has no definition." was American Poet Abrose Bierce's choice of definition in his 1906 satirical book *The Devil's Dictionary*. Albeit satirical, his definition brings into question the age-old problem of attempting to define the nebulous idea of what constitutes art. And even within the confines of well-established visual artwork, a layperson who is not trained in the various types of visual art might be able to distinguish the brushy, impressionist style of Auguste Renoir from the distinctive abstract expressionist style of Jackson Pollock, while the attribution of brushy, saturated paintings showing a mastery of chiaroscuro to Rembrandt might be beyond their capability. What does it mean for an artwork to be labelled as 'brushy' to begin with? A strong background in art is often necessary for the more nuanced painting classifications; the classification of visual artwork is a more challenging problem than rudimentary object classification.

Description

In this project, our objectives are two-folds. Firstly, we seek to train a deep learning model to recognize and classify visual artwork (in the context of this project, limited to digital artwork, pictures, and paintings[1]) according to various attributes (artist, genre, style, time period[1]) and investigate what features allow certain paintings to be grouped together distinctly from others. Secondly, we wish to investigate the capability of deep learning models in recognizing established art (defined as well-recognized pieces of visual artwork) from a set of random images and analyze what is deemed as separating 'art' from ordinary images.

Proposed Solution

A few different models and approaches will be tested, including but not limited to:

- Multilayer perceptron (MLP) and convolutional neural network (CNN) to extract features based on data insights from the data exploration stage
- End-to-end MLP and CNN models for the binary classification problem and the categorization of images according to their different attributes

Milestones

By Week 9: Complete data collection (images of artwork, a sufficiently random set of images closely related to the chosen subset of artwork). Data scraper is developed if necessary.
By Week 10: Complete data analysis to derive insights into features linked with categories etc. Include insights in report. Complete data pre-processing (normalization, labelling etc.)
By Week 12: Apply deep learning to obtain various models trained on the data. Tweaking of models and changes to the scope of the dataset based on the results is completed by this milestone.
By Week 13: Complete comparative analysis of obtained models' numerical results. Conclude on results and complete the report.

[1]Scope may be further limited and modified as deemed necessary throughout the course of this project