



Painting Recognition - First Milestone

Team members:

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GITHUB REPOSITORY:

- <https://github.com/Daniele1209/CV-and-DL-Painting-Recognition>

1. Articles and research papers:

There have been many other articles tackling classification on paintings regarding, genre, artist, painting description and even painting generation using generative adversarial networks. One of the articles that caught our attention was "**Genre Classification of Paintings**" ([https://www.vcl.fer.hr/papers_pdf/Genre Classification of Paintings.pdf](https://www.vcl.fer.hr/papers_pdf/Genre%20Classification%20of%20Paintings.pdf)). It uses feature extraction on paintings using convolutional neural networks, having a dataset from Wiki-Art containing over 1000 images of paintings, that are tagged with the genre corresponding to the painting

Another good example of such an article is "**Painting-91: a large scale database for computational painting categorization**" (<https://www.diva-portal.org/smash/get/diva2:756963/FULLTEXT01.pdf>), which uses a dataset consisting of 4266 images of 91 artists and classifies paintings with respect to a certain style of art. It also uses dense sampling scheme for Feature Detection and color-LBP for artist and style classification

We also have an example of style recognition from artworks "**Recognizing Art Style Automatically with deep learning**" (https://www.researchgate.net/publication/331246867_Recognizing_Art_Style_Automatically_with_deep_learning), which also uses the Wiki-Art dataset and residual neural network to improve accuracy (> 62%)

2. Data:

There are multiple suitable dataset for the problem at hand, such as the painting dataset from the Rijksmuseum museum, which is a well documented and complex dataset providing more than 10000 paintings and characteristics, the museum providing an API [1] containing multiple details such as: image, title, complete title, colors, details and many more. This is a totally valid dataset for such a problem, but it might be too complex for the data that we need in order to build the model.

Another good example of dataset would be the Wiki-Art: Visual Art Encyclopedia dataset [2] containing around 100k paintings gathered from Wiki-Art, high quality images, also containing tags. Unfortunately the tags in the dataset refer to the "style" of the paintings.

The dataset that we decided to go with is "**Best Artworks of All Time**" from Kaggle [3] representing a collection of artworks of the 50 most influential artists of all time, which contains the artworks of the most well known artists (50 of them). The dataset contains around 17k different paintings corresponding to 50 artists, each artist having various other characteristics in the csv file, such as the time period, genre, bio and nationality.

3. Introduction section:

Computer analysis of visual art, especially paintings, is an interesting cross-disciplinary research domain.

With the spread of digitalization of art paintings, research on diverse scientific approaches on painted images has become active.

The artistic style (or artistic movement) of a painting is a rich descriptor that captures both visual and historical information about the painting.

Correctly identifying the artistic style of a paintings is crucial for indexing large artistic databases.

Our aim is to investigate the use of deep learning to solve the problem of detecting the artistic style of a painting.

References and Notes

1. Rijksmuseum dataset and API, data collected since 1885 URL: <https://data.rijksmuseum.nl/>
2. Wiki-Art dataset, containing tags for the style of paintings URL: <https://www.kaggle.com/ipythonx/wikiart-gangogh-creating-art-gan>
3. Best artworks of all time, Kaggle, collected from artchallenge.ru at the end of February 2019 URL: <https://www.kaggle.com/ikarus777/best-artworks-of-all-time>