Artist recognition with computer vision

Intermediate Presentation

Course: Applications of Image and Video Processing
Maastricht University

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Overview

Data preprocessing

Model
- Automatic categorization of art collections
- Forgery detection
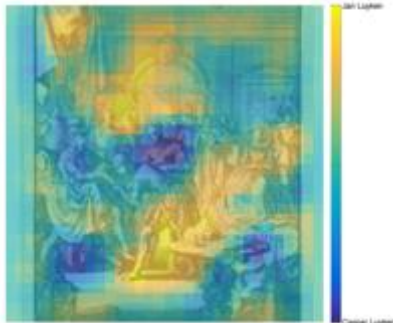- Neural Style Transfer

Project Goal

- Train a classifier that is able to estimate

  - Artist
  - Year
  - Artistic Movement

- Test various models from the literature
- Frequency domain filtering, sharpening filters

Related Work

PigeoNET[1]

- Based on AlexNet
- Rijksmuseum Challenge dataset[2]
- Ability to discover dual authorship
- Accuracy 52%-78%

Recognizing Art Style Automatically with deep learning[2]

- AlexNet, ResNet
- Transfer learning on ImageNet
- Wikipaintings dataset[4]
- Accuracy 62%
- Performance <u>varies widely between</u> different art styles

1 Van Noord, Nanne, Ella Hendriks, and Eric Postma. "Toward discovery of the artist's style: Learning to recognize artists by their artworks." IEEE Signal Processing Magazine 32.4 (2015): 46-54.

2 Mensink, Thomas, and Jan Van Gemert. "The rijksmuseum challenge: Museum-centered visual recognition." Proceedings of International Conference on Multimedia Retrieval. 2014.

3 Lecoutre, Adrian, Benjamin Negrevergne, and Florian Yger. "Recognizing art style automatically in painting with deep learning." Asian conference on machine learning. PMLR, 2017

4 https://paperswithcode.com/dataset/wikiart

Approach

Data

Method

- Filtering
- Data augmentation

- The literature suggest to use a rather deep CNN
  - Alex-Net
  - ResNet
  - U-Net
- Dropout, Regularization

Potential Challenges

- Uneven distribution of labels might become an issue
- Some artistic styles are rather similar and hard to distinguish
- For other styles (e.g. surrealism) each picture looks very different

Thank you

References

- Mensink, Thomas, and Jan Van Gemert. "The rijksmuseum challenge: Museum-centered visual recognition." Proceedings of International Conference on Multimedia Retrieval. 2014.
- Lecoutre, Adrian, Benjamin Negrevergne, and Florian Yger. "Recognizing art style automatically in painting with deep learning." Asian conference on machine learning. PMLR, 2017.
- https://paperswithcode.com/dataset/wikiart
- Van Noord, Nanne, Ella Hendriks, and Eric Postma. "Toward discovery of the artist's style: Learning to recognize artists by their artworks." IEEE Signal Processing Magazine 32.4 (2015): .