MODERN SCULPTURE & AI

Type Classification of museum Beelden aan Zee's digital modern sculpture collection using Transfer Learning of Convolutional Neural Networks

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Introduction

Currently, CNNs trained on animal images can detect style in paintings. [1] However, is it possible to go beyond, and ask:

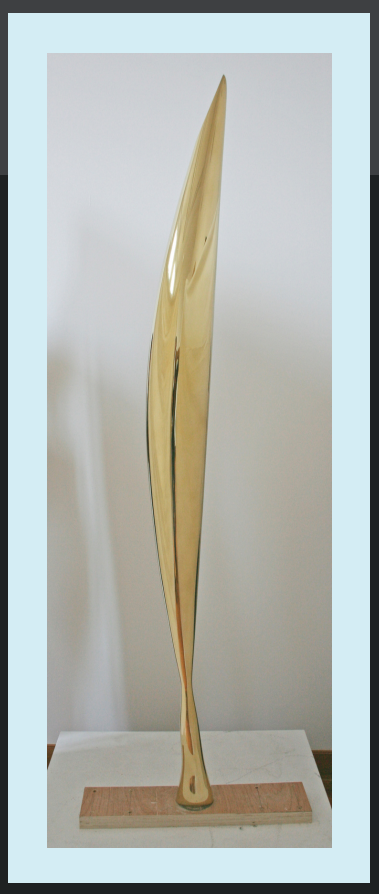
How accurate are CNNs predictions of classifying types of modern and contemporary sculpture?

Using Transfer Learning, this hypothesis is tested on images from the digital collection of BaZ.

Data

- Latest: 651 images in total
- 8 Types (bust, figure, fragment, geometric form, head, installation, organic form, and relievo)
- Monochrome and multi-color
- Front-view and/or side profile

Figure or Organic form?



Constantin Brâncuși (1876-1957), *Bird in Space* ca.1932-1940

Methods

- Three models (EfficientNet Acc 93.532, RegNet Acc 95.444, RestNet Acc 95.434) are tested and compared
- Transfer Learning
- Transforms and Augmentations
- Confusion Matrix and feature maps

Conclusions

Challenges:

- Modern art often needs context for an accurate art-historical classification
- The conflict of multi-dimensionality and single viewpoint

Literature

[1] Cetinic, Eva, Tomislav Lipic, and Sonja Grgic. "Fine-tuning convolutional neural networks for fine art classification." *Expert Systems with Applications* 114 (2018).

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Further information

Visit https://collectiebeeldenaanzee.nl for BaZ's Virtual Exhibition 'Eigen+Beeld', featuring sculptures included in this research. s2313820@vuw.leidenuniv.nl