

# Predicting User Preferences of Paintings in the Wild

02501 Advanced Deep Learning in Computer Vision

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## 1 Introduction

It is quite difficult to explain what one’s preferred taste in art is. When deciding to acquire a painting, individuals sometimes turn to platforms like [dba.dk](#), where an immense number of artworks are available for purchase, but creating an overview of these on your own can seem like an insurmountable task, which deep models could assist with.

## 2 Data

The data for this project consists of [a collection of artwork](#) images scraped from dba.dk. It’s worth noting that these images may contain additional elements beyond just the artwork itself. This could include frames, backgrounds, or other objects that might not directly relate to the artwork but are present in the image, thus the “in the wild” setting.

## 3 Task

You should find a way to label the art preferences of a user in these data. One approach could involve presenting users (yourself) with pairs of artwork images and collecting labels indicating which artwork is preferred. Alternatively, users could rate artworks on a scale from 1 to 10 based on their preference. Now, the challenge lies in developing deep learning models capable of understanding and predicting the nuanced preferences a user may have. It is preferable to use a strong pre-trained model for this, such as CLIP [\[RKH<sup>+</sup>21\]](#).

You, therefore, must at least:

- Label art preferences of the users in your group.
- Be able to predict the preferences of a user on unseen images.

Additionally, you can then look further into one or more of the following tasks:

- Improve the performance of the model
- Use classifier guidance on a pre-trained diffusion model to create novel artworks the user would like.
- Handling a new user in the system (cold start problem) by using active learning to select which images they should label.
- Interpret what the model has learned, and express it in words, or generate descriptions of likable artworks.

## References

- [RKH<sup>+</sup>21] Alec Radford, Jong Wook Kim, Chris Hallacy, Aditya Ramesh, Gabriel Goh, Sandhini Agarwal, Girish Sastry, Amanda Askell, Pamela Mishkin, Jack Clark, et al. Learning transferable visual models from natural language supervision. In *International conference on machine learning*, pages 8748–8763. PMLR, 2021.