



Project 1 - Design and implementation a recommendation system

Web Mining and Social Networking Course

Author: Mehrdad Mohammadian

Instructor: **DR. Mehrdad Jalali**

Date Last Edited: January 1, 2022

Project

1 Design and implementation a recommendation system

Method and Tools**1. Download the WikiArt dataset and apply pre-process on it:**

- **WikiArt Dataset page:** <https://data.mendeley.com/datasets/289kxpn57/1>
- Resize the images to 224x224
- Convert images to matrix

2. Prepare pre-trained MobileNet model for extract features:

- Using imagenet weights
- Delete last layers of the model (output classification layers)
- Predict features of each image
- Create the similarity matrix using cosine similarity formula

3. Recommendation:

- Getting a image from users recommend top 6 images to them
(suppose that a user like or select a image in search results or feed section our in social network)

Why MobileNet architecture?

MobileNet is a Efficient Convolutional Neural Networks for Mobile Vision Applications it's a light weight deep neural networks, and i want to do recommendation in a webapp, so speed of predict time is important for me. Although it is a light model, its predictions have good results.

Tools:

- **Programming Languages:** Python
- **Libraries:** Tensorflow, Scikit-Learn, Numpy, Pandas, tqdm, Steamlit

Implementation:

- **Web App link:** <https://share.streamlit.io/mehrdad-dev/portrait-painting-recommendation/main/app.py>
- **GitHub Repo:** <https://github.com/mehrdad-dev/Portrait-Painting-Recommendation>

Sample Images:

Some Good Results:

Your selected image



Selected image

Recommendation Results:



Similarity Score: 0.803

Similarity Score: 0.800

Similarity Score: 0.794



Similarity Score: 0.797

Similarity Score: 0.796

Similarity Score: 0.796

Your selected image



Selected image

Recommendation Results:



Similarity Score: 0.800

Similarity Score: 0.800

Similarity Score: 0.796



Similarity Score: 0.797

Similarity Score: 0.796

Similarity Score: 0.790

Your selected image



Selected image

Recommendation Results:



Similarity Score: 0.800

Similarity Score: 0.800

Similarity Score: 0.796



Similarity Score: 0.796

Similarity Score: 0.791

Similarity Score: 0.790

Your selected image



Selected image

Recommendation Results:



Similarity Score: 0.817

Similarity Score: 0.806

Similarity Score: 0.793



Similarity Score: 0.793

Similarity Score: 0.792

Similarity Score: 0.796