CS3 Rubric - Classifying Artwork

DS 4002 - Spring 2025 - Instructors: Javier Rasero; TA: Mercedes Mora-Figueroa
Due: TBD

Submission Format: Upload link to Github repository to Canvas

Individual Assignment

General Description: Follow along with a case study to create a Convolutional Neural Network that can classify artwork into the categories ‘painting’ and ‘drawing’.

Why am I doing this? Machine learning has rapidly increased in popularity over the past few years. For those interested in working in technology or just generally making themselves more marketable, having an understanding of machine learning principles is a must. This case study provides you with an opportunity to get hands-on experience with machine learning utilizing techniques related to image classification.

What am I going to do? In this assignment you will create a convolution neural network (CNN) to classify European artwork from the MET Museum as either a ‘drawing’ or ‘painting’.This model will be built on top of the existing ResNet50 image classification model. In completing this assignment you will become familiar with, standardizing images for model processing, using transfer learning to employ the ResNet50 base model, and evaluating the results of image classification models. Deliverables include:

- Data Folder
- Scripts Folder
- Written Portion
- References
- GitHub Repository contains materials used

Tips for success:

- Be curious! Experiment with different model parameters and model evaluation metrics.
- Review associated reference material before viewing related code.
- Consider how these techniques can be applied to solve problems that interest you!
- Consult the frequently asked question document if needed.

How will I know if I have succeeded? You will have succeeded when you successfully follow and complete the rubric below:

Formatting	● Repository - A GitHub repository containing necessary materials ○ Submit a link to the repo which includes: ■ Data, Output, and Scripts Folders ■ Written Portion ■ License, ReadME, and relevant references
Data Folder	● Goal: This folder contains the data associated with the project ● Include original and cleaned datasets
Output Folder	● This folder includes all the graphs generated by code
Scripts Folder	● Goal: This folder contains all the source code needed for the case study ● Include detail comments for each section of code
Written Portion	● Goal: Analyze the results of the case study ● Write a short paragraph discussing key findings. In addition, consider and point out relevant biases that may be present in the analysis. Furthermore, how did you decide certain variable factors such as how many epochs to use? ● Include screenshots of relevant graphs
LICENSE.md	● Create a license document to detail how your work can be used
README	● Create a ReadME to outline to someone who visits your repository for the first time what you did. What libraries might they need to download to run your project?
References	● Include the references for any websites you may have consulted / found beneficial. Use IEEE format.

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