

CS 450 – Computer Vision and Machine Learning

PROJECT 1 SUBMISSION GUIDELINES

This project must be done as a team of two. All submissions are ONE PER TEAM.

Submit a Word document or PowerPoint slides or PDF document, **AND** a Jupyter Notebook containing the following. The length of the document should be 2-5 pages (a little more if they are slides, but not more than 10). You could submit just a Jupyter notebook (i.e. without a Word/PowerPoint/PDF), but then you must use a lot of markup cells to explain everything.

Data and the Purpose of the Project

Specify the name of the image dataset. If the data is publicly available, give a link to it. If not, you can submit it as a zip file if it is less than 10MB in size. If it isn't publicly available and it is too large to submit, mention that. Next, describe what images the dataset contains and specify what problem you are planning to solve using that data. For instance, "The dataset contains photos of different breeds of dogs, and I am trying to classify the breeds using images."

Method (You CANNOT use neural networks for this project)

Here you explain what kind of features you are using and what machine learning technique you are using to solve your problem. The problem could be classification, retrieval, object detection, segmentation, or any of a variety of computer vision problems. Images can be found from a variety of sources. A sample list of such sources can be found at the end of this document.

Solving the Problem

Here you try to solve the problem you proposed earlier by some kind of Supervised/Unsupervised Machine Learning technique. Split the data into training/test sets for supervised techniques. Fit your model on the training set and test its performance on the test set. Evaluate this using numeric error or success values and appropriate visualizations. If this performance isn't great, don't panic. Write down why you think it isn't good, and what in your opinion may be done to fix it.

Work alone and submit one ZIP file on Moodle. This should contain the document, all code in the form of Jupyter Notebook or Python files, and the dataset if needed (see above).

You will need to present the project in class after the Fall Break.

List of sources where image datasets could be found. This is not an exhaustive list.

- <https://www.kaggle.com/>
- <http://www.vision.caltech.edu/datasets/>
- <https://www.robots.ox.ac.uk/~vgg/data/>
- <https://www.yelp.com/dataset>