

Mid-term

Goals

In this assignment you will practice putting together a simple image classification pipeline based on the Softmax classifier. The goals of this assignment are as follows:

- Implement and apply a **Softmax** classifier.
- Implement and apply a **Two layer neural network** classifier.
- Understand the differences and tradeoffs between these classifiers.
- Get a basic understanding of performance improvements from using **higher-level representations** as opposed to raw pixels, e.g. color histograms, Histogram of Gradient (HOG) features, etc.

(a) Implement a Softmax classifier [50pts]

The notebook **softmax.ipynb** will walk you through implementing the Softmax classifier.

(b) Two-Layer Neural Network [50pts]

The notebook **two_layer_net.ipynb** will walk you through the implementation of a two-layer neural network classifier.

(c) Higher Level Representations: Image Features[20pts](Bonus!)

The notebook **features.ipynb** will examine the improvements gained by using higher-level representations as opposed to using raw pixel values.