ISTD 50.035
Computer Vision
2020

Tutorial exercise (topics: linear classifier, cross-entropy loss, gradient descent)

Note: Use natural logarithm, i.e., logarithm to the base of e, unless specified otherwise.

Q.1

Consider training of a (two-class) linear classifier with gradient descent and cross-entropy loss.

The 2-by-4 weight matrix at iteration t is given by:

[0.1 0.2 0.3 0.4
0.5 0.6 0.7 0.1]

A training sample x_i given by [1, 2, 2, 1]^T is used. The ground-truth class for this sample is the first class.

Compute:

i) The cross-entropy loss for this training sample x_i

ii) The updated weight matrix at (t+1)th iteration of gradient descent. The learning rate is 0.1.