ECE421 Programming Assignment 1

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1 1. Pocket Algorithm

1. *tol* parameter is the stopping criterion. If it is not None, the iterations will stop when $E_{in}(w(t+1)) > E_{in}(w(t)) + tol$

2. No, because function will stop iterating if $E_{in}(w(t+1)) > E_{in}(w(t)) + 1e-3$. We would need to set tol = None

3. We can set use the $class_weight$ to assign weights to each class. It takes a dictionary where the key is the class label and the assigned value is the weight.

4. Very close

2 2. Linear Regression

1. Yes it is, because the product of the multiplication of a matrix by its transpose is a singular matrix. Hence, X^TX is a singular matrix and my call to *linalg.inv* on it will flag an error because singular matrices are invertible.

2. ERROR

3. *linalg.inv* calculates the inverse of the matrix, whilst *linalg.pinv* returns its pseudo-inverse. So, if the matrix is invertible, its pseudo-inverse will be equal to its inverse, and if it's not invertible, it's pseudo-inverse will be returned.