

## CS 675 mid exam review sheet

The exam will contain problems where data is given and we will ask computations. For example you may be given a vector and asked to compute its length. Or you may be given some data and asked to classify it with some algorithm (one that we have studied in the course). Expect problems involving the following topics.

1. Dot product, length of vector: how compute these given simple examples?
2. Maximum likelihood, coin tosses: what is maximum likelihood estimate for an example dataset?
3. Distance of point to plane: what is the formula for this?
4. Nearest means classifier: classify the data with this algorithm.
5. Kernels and feature space transformation: know the concepts and applications to simple examples
6. Support vector machine: what is it conceptually and how to identify it?
7. Logistic discrimination: what is its loss function? How to train it on data?
8. Perceptron: what is its loss function? How to train it on data?
9. Loss functions: compute the loss function value for a simple given example?
10. Gradient descent: know the basic algorithm and how to apply it to simple example
11. Effect of outliers: what is the effect of it on the perceptron vs. support vector machine loss?

