

# CMSC 35400 / STAT 37710

Spring 2020

## Homework 8

You must clearly indicate where your solutions to individual subproblems are in gradescope. If you force the graders to do this for you, points will be deducted from your total.

**Reading:** Read chapter 11 in Elements of Statistical Learning, chapter 5 in Pattern Recognition and Machine Learning.

1. Elements of statistical learning, exercise 11.1
2. Bishop exercise 5.1
3. Elements of statistical learning, exercise 11.2
4. Elements of statistical learning, exercise 11.4
5. Bishop exercise 5.5
6. Consider a two-layer network of the form shown in Bishop Figure 5.1 with the addition of extra parameters corresponding to skip-layer connections that go directly from the inputs to the outputs. By extending the derivation of back propagation equations in the lecture notes, write down the equations for the derivatives of the error function with respect to these additional parameters.
7. Elements of statistical learning, exercise 11.5