

ECEN 760: Probabilistic Graphical Models - Homework 2

- Date Assigned: Friday, 09/15/2017
 - Date Due: Friday, 09/22/2017
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I Reading Exercise

Chapter 3 from Probabilistic Graphical Models by Koller and Friedman

II Problems

1. Write a program in Python using pgmpy to specify the Bayesian network corresponding to the Student example in Koller and Friedman. Using pgmpy
 - Find the marginal distribution for all the 5 variables
 - Is the trail from D to S active given L ?
 - List all the conditional independencies that are satisfied by the Bayesian network

The Jupyter notebook BayesianNetwork.ipynb has more detailed instructions on how to set up the Bayesian network in pgmpy.

2. Implement a multinomial naive Bayes classifier for the data set 20Newsgroups. The Jupyter notebook MultinomialBayesClassifier.ipynb found on the shared google drive has the instructions for how to download the data and what to implement. Find the classification error over the test set for various values of the smoothing parameter α and by trial and error find a good value of α .