

Course title: Introduction to Machine Learning  
Course number: CSS 490 / 590  
Term: Winter 2012  
Instructor: Jeff Howbert

## Exercises 1

Date assigned: Jan. 4, 2012  
Date due: Jan. 9, 2012

1) [ 10 points ] You have developed a fast algorithm for retrieving addresses and phone numbers from a very large database, using a person's name as the search key. Is this machine learning? Why or why not?

2) [ 10 points each ] For each of the following scenarios, state which type of machine learning would be appropriate: classification, regression, clustering, or a recommender system. Briefly (1-2 sentences) justify your answers.

- a) You are having a argument with your friend about how many social groups there are at your school. You believe there are about half-a-dozen natural groups based on tastes in things like music, clothes, athletics, and politics, while your friend thinks everyone's tastes are pretty random. You discover you can access (publicly available) individual records from a poll where 1000 students scored their preferences on 20 forms of arts and entertainment.
- b) You work at an oil company, and they are interested in predicting whether wells drilled in several new formations will produce oil or not. They give you a large quantity of data from past drilling efforts (geographic location, depth of well, type of rock, age of formation, etc.), along with the success or failure of each drilled well.
- c) The florist in your neighborhood has a pretty good idea what kinds of flowers arrangements her steady customers like, and often makes suggestions to them, but she'd like to be more scientific. She has excellent records of all their past purchases, as well as complete histories of which arrangements they have viewed on the shop's website.
- d) A dietician has been trying to understand how people's dietary choices affect the amount of weight they gain or lose, but isn't seeing obvious patterns. For a recent 6-month period, he has good records for 150 of his clients on their consumption of 12 different foods, along with the change in their weight over that period.

3) [ 10 points ] Describe a situation in your life where machine learning might be of benefit. For example, this could be something you deal with at work, at school, or on the internet (e.g. a social networking site). Say as much as you can about the problem to be solved, the data or information you might collect, and the type of machine learning you think is applicable. (There isn't necessarily a correct answer to this question; I just want you to start being able to recognize opportunities to apply machine learning.)