CS 451 Class 1 – Definitions of machine learning; supervised vs. unsupervised learning

Form groups of 3 and discuss answers to the following questions. Guessing is fine. Do not consult the Internet.

1. Come up with a working definition of “Machine Learning” (1 sentence)

2. What is supervised learning? What is unsupervised learning? Can you come up with explanations / guesses? What are the characteristics of each? Try to give an example of each. Which one do you think is easier?

[we will discuss answers before moving on]

3. Which of the following task are well-suited to be solved via machine learning? Which are not? For those that are, do you think supervised or unsupervised learning should / could be used (or both)? Use “SL”, “UL”, or “–” to mark each task.

   a. Making a good move in a chess game
   b. Making the optimal move in a game of Tic Tac Toe
   c. Making movie recommendations
   d. Detecting credit card fraud
   e. Fitting a straight line to a set of points
   f. Multiplying two matrices
   g. Determining whether a number is prime
   h. Estimating the number of primes up to a given number N
   i. Naming the objects in a photograph
   j. Stereo vision, i.e., determine the 3D depth of each pixel from an image pair
   k. Steering an autonomous car on the highway