CS 7641 Prerequisites Test

Answering the following questions will tell you if you are ready to take the CS 7641 Machine Learning class. If you are not able to answer “Yes” to these questions, then we suggest that you go through the reading list at the end of this document.

The official prerequisite for this course is an introductory course in artificial intelligence. In particular, those of you with experience in a general representational issues in AI, some AI programming, and at least some background (or barring that, willingness to pick up some background) in statistics and information theory should be fine.

Do you know what are eigenvectors? Do you know how to calculate eigenvalues of a matrix?	Y/N
Can you decompose a matrix using SVD (Singular Value Decomposition)?	Y/N
Do you know what are the conditions of a valid distance metric?	Y/N
Do you know what is the Bayes Rule?	Y/N
Can you calculate the expectation of a random variable?	Y/N
Can you calculate the covariance/correlation between two random variables?	Y/N
Do you know these search algorithms - Breadth first search, Depth first search and A*?	Y/N
Can you explain the properties of the above search algorithms using Asymptotic analysis (using big O notation)?	Y/N
Have you worked (not necessarily programmed) with a python, R, Matlab or JAVA program?	Y/N

Reading List

1. Linear Algebra
   Read either of
   1. Numerical Linear Algebra by Lloyd N. Trefethen , David Bau III (Read Section I Fundamental unto Chapter 5)
   2. Introduction to Linear Algebra, Fourth Edition By Gilbert Strang

2. Probability and Statistics
   1. All of Statistics by Larry Wasserman (Read Section I, Probability)

3. Artificial Intelligence (optional)
   1. Artificial Intelligence: A Modern Approach by Stuart Russel and Peter Norvig