NC STATE
UNIVERSITY

PY-599 (Fall 2018): Applied Artificial Intelligence
Reading Assignment

The goal of this reading assignment is to refresh your knowledge of probability and statistics.

If you could easily follow the session 6 lecture on probability, conditional probability, probability distribution and Bayes' rule, you are good!

If you know those concepts, but need some refreshment, please read Chapter 3 of Deep learning.

If you find Deep learning's chapter 3 too hard to follow, or have no prior experience with these topics, MIT's open course on Probability and Statistics is a fantastic resource.

https://ocw.mit.edu/courses/mathematics/18-05-introduction-to-probability-and-statistics-spring-2014/readings/

You don't need to go through the entire MIT course or the entire chapter 3 of Deep Learning book.

Here is the list of concepts from Probability and Statistics that we need for PY599 Applied Artificial Intelligence (for now). You can just focus on this list and learn them from the recourses listed above.

- The basic notion of probability
- Random variable (discrete and continuous) – what it is and what it means.
- Probability distribution function (discrete and continuous) – what it is and what it means.
- Expected value and variance of random variables (discrete and continuous) – what they are and what they mean, and how to calculate them.
- Important probability distribution functions. – You don't have to memorize them; you just need to understand what they are, what they represent, and how to use them.
    - Continuous probability distribution functions: Uniform, Normal.
    - Discrete probability distribution functions: Bernoulli, Binomial.
- Joint Distributions. – Again, just what it is and what it means.
- Conditional Probability. – What it is and what it means. How to use it.
- Central limit theorem and the law of large numbers. – What it is and what it implies.
- Bayes' rule. – What it is and how to use it.