

To students who are interested in pursuing a Ph.D. with me:

I am working on problems in statistics, machine learning, and neuroscience. Some problems may require substantial preparation.

- For the **statistics** component, what I suggest is to begin by reading a very old but in my view never outdated book by Fisher (*Statistical Methods for Research Workers*), a book on mathematical statistics (e.g., Bickel and Doksum's *Mathematical Statistics Volume 1*), and one on applied statistics (e.g., *The Elements of Statistical Learning*). To get a more comprehensive perspective of statistics, I expect you to finish *Bayesian Data Analysis* (Gelman and others), *Empirical Processes* (Kosorok), *Basics of Modern Mathematical Statistics* (Spoikoiny and Dickhaus), and *A Graduate Course in Statistical Inference* (Li and Babu) by yourself; skimming through is fine.
- For the **machine learning** component, I suggest that you begin with *Pattern Recognition and Machine Learning* (Bishop) and *Deep Learning* (Goodfellow, Bengio, and Courville).
- For the **neuroscience** component, I also suggest that one begins with reading. What helps me the most is *A Vision of the Brain* (Zeki). Next are the articles in the special issue on the Brain (September 1979, Scientific American) and *Neural Darwinism* (Edelman). You may also add *Principles of Neural Science* (Eric Kandel and others) – it is a huge book and I suggest perhaps beginning with the visual cortex and motor cortex.

I also recommend reading a few papers on regularization, neural networks, connectivism, and directed graphs, as well as their related areas in economics, psychology, law, and philosophy. Certainly, you do not have to read all of them before you start your own research.

As my students, I will suggest a direction or a baby problem that is interesting and has a potential solution. I expect the best students to, eventually, discover their own problems based on independent thinking. I firmly believe that ambitious individuals like you need to learn as early as possible how to independently pinpoint problems and solve them. This will, in one way or another, prepare you for the real world, whether academia, government, or industry.

Be willing to fail at times - those are the best times: if you have average intelligence, enthusiasm, and integrity, you will get up and find an improved version of yourself.

Finally, learning is two-way. You will be teaching me as much as, if not more than, I teach you.

O.Y.C.