Neural Signal Processing
COGS118C - Summer Session 1

- Are you excited by the notion of [controlling an exoskeleton](#) with your brain signals?
- Are you curious about the scientific pursuit of dissecting the neural basis of our minds?
- Are you driven by creating consumer neurofeedback technologies that can improve our lives?
- Or are you simply fascinated with decoding the brain as an extremely complex electrochemical system?

> Learning how to analyze brain signals, as well as understanding their biological origins, are the first steps to accomplishing all of the above, and if you answered yes to any of those questions, you should consider enrolling in **COGS118C - Neural Signal Processing**, now offered in **Summer Session 1**.

> Over the course of 5 weeks, we will cover theoretical foundations and practical applications of signal processing to neural data. Topics include **EEG /field potential** methods (time-frequency analysis, filtering, Fourier (spectral) analysis, coherence) and spike train analysis (reverse correlation, spike sorting, multi-electrode recordings). Class time will be a **mixture of lectures, group discussion, and coding practice**. By the end of the course, students will acquire **a personal portfolio of Python programming toolbox** that demonstrates practical proficiency in neural signal processing.

> For more details, see:
https://github.com/rdgao/COGS118C/blob/master/Course%20Documents/pre-syllabus.pdf

> **Recommended Prerequisites**
A good grasp of college-level mathematics (calculus, linear algebra, statistics, and complex numbers) and programming (Python or MATLAB), as well as exposure to neurobiology is recommended. For example:
MATH 20A/B, 18 or 31AH; COGS 14B or PSYCH 60; COGS 18, 108, or 109, or Computer Science equivalent
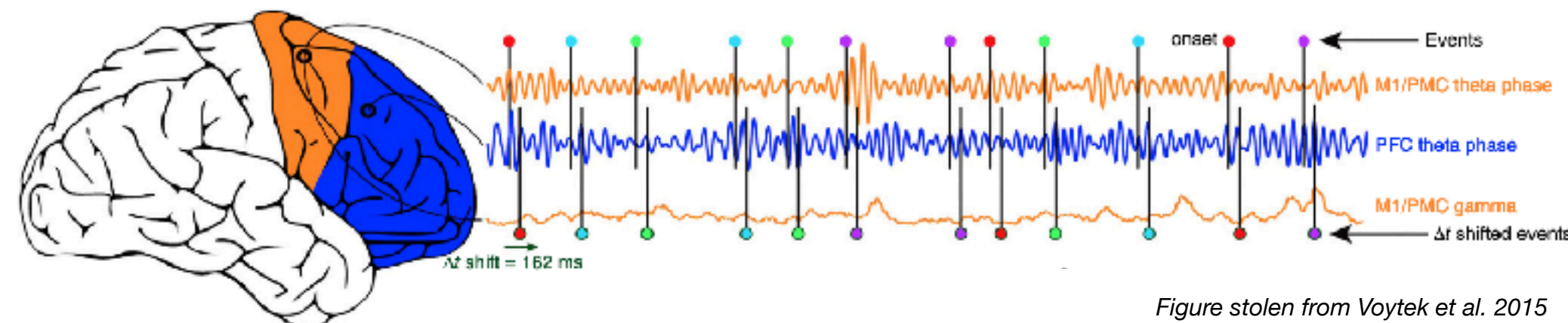
Contact Richard Gao (rigao@ucsd.edu) for questions

Figure stolen from Voytek et al. 2015