Review of Week 8

COGS1 – Winter 2017
Important Announcements:

- **Two EC-Reading Quizzes for Week 9!**
  - EC-Reading Quiz - Neuromorphic-Brain: Tuesday, Mar 7@3:30p - Wednesday, Mar 8 @10:45a
  - EC-Reading Quiz - Real-time Neuroimaging: Thursday, Mar 9@3:30p - Friday, Mar 10 @10:45a

- Stay connected: Announcements and reminders are made via TritonEd.

- Midterm grades are posted on TritonEd. Good Job Everyone!
  - Go to any of the TA/IAs to see your exams and get feedback.
  - Final Exam will include more reading material than the midterms did.
  - Final Exam will focus on Weeks: 7, 8, 9, and 10 material.

- Remember: **Bonus Quiz-J** - week 10 material -- will be administered on TritonEd.
  - Bonus Quiz-J will count as extra credit towards your QUIZ grade. 😊
Week 9 readings (two EC quizzes 😊)

Readings for Week 9

**Reverse engineering the cognitive brain**

**Real-Time Neuroimaging and Cognitive Monitoring Using Wearable Dry EEG**

**EC QUIZ THURSDAY**

**EC QUIZ TUESDAY**
## Boyle - Introduction to Action Potential

- Identify the anatomical and functional components of a neuron.
- What is a synapse? How is neurotransmitter released from a synapse?
- What is a membrane potential? How is it measured? What are the units?
- Provide a timeline and graph (with all of the phases: resting, rising, falling, hyperpolarization) for all of the steps associated with an action potential.
- Describe and define the differences between voltage gated ion channels (e.g. vNa+, vK+, vCa++) and ligand/xmtr gated ion channels. Where are the different channels located on a typical neuron?
- How do the electrostatic and diffusion forces drive the movement of ions in or out of the neuron?
- Discuss how the movements of ions through channels can change the membrane potential. What is the relationship between ions and current?
- How does the Na+ equilibrium potential drive the rising phase of the AP? How does the K+ equilibrium potential drive the falling phase of the AP?
Discuss the integrate and fire neuron as presented during lecture.

Who was Donald Hebb?

What is habituation, sensitization and classical conditioning? Describe the experiment. What are the neuronal changes seen with each of these learning paradigms?

Why would these forms of implicit learning be important for an animal (or you)? 😊

How can the synapse change its strength? What does that mean?

What are the different mechanisms discussed during lecture associated with physical changes at the synapse (pre and post).

What is alphaGo? How does alphaGo learn? What is deep learning? How does alphaGo differ from Siri?

Who is Demis Hassabis? Who is Lee Sedol?