Welcome!!!

To the third

UCSD TDLC Boot Camp in

The Temporal Dynamics of Learning
The Temporal Dynamics of Learning Center Goals

• Create a *Science of the Temporal Dynamics of Learning*

• Change educational *practice* based on sound science.

• Do this by creating a new collaborative research structure, the *network of networks*, to transform the practice of science.
What would a science of the Temporal Dynamics of Learning look like?

- We believe it means achieving an integrated understanding of the role of time and timing in learning, across multiple
  - *temporal and spatial scales*,
  - *brain systems*, and
  - *social systems*. 
What are the components of a science of the Temporal Dynamics of Learning?

- How organisms adapt to their input (the temporal dynamics of the world)
- How organisms adapt their outputs (the temporal dynamics of action) appropriately to manipulate the world
- And how the brain in between accomplishes this (the temporal dynamics of the brain)
- But a science requires formalism (the theory of the temporal dynamics of learning)
The organization of TDLC: The “network of research networks”

SensoriMotor Network  Social Interaction Network

Interacting Memory Systems  Perceptual Expertise Network

Temporal Dynamics of Learning 2015 Bootcamp!!
Goals of Boot Camp

This is “Basic Training” -- we want you all to have a basic set of skills from the four research networks, as well as computational modeling, and some of our unique facilities.
Goals of Boot Camp

• We also want you to expand your horizons beyond Basic --
  – to Python! ;-)

• Seriously, the goal of the one week project is to give you a more in-depth experience in what we hope is a NEW area for you.

• We expect everyone to do a project.

• **Yes, YOU!**
Our Expectations

- This is also a place to meet and bond with students with similar interests.
- We expect you to work your *ahems* off.
- We expect you to stay late but still come in in time for breakfast.
- We expect you to have a lot of fun!
The Schedule: Week 1

• Free breakfast! 8:30-9:00
• Lectures in AM until 12:15 (today 12:30)
• Free Lunch! Outside in the courtyard
• Afternoons: Practical labs: 1:30-5PM or so…
• Dinner: on your own (out of towners are provided meals at Café Ventanas, but don’t feel like you *have* to eat there…)
• Evenings: Occasional tutorials (MEET HERE)
  – Python: TONIGHT 7:00-8:30PM Note: this will be useful if you want to do EEG next week…
The Schedule: Week 1

• Today: Sensorimotor Network
• Tuesday: Social Interaction Network
• Wednesday: Interacting Memory Systems
• Thursday: Perceptual Expertise Network
• Friday: Cognitive Modeling
• Saturday: MEG and Imaging analysis (MVPA and friends)
• Sunday: The Zoo!
The Schedule: Week 2

- Free breakfast! 8:30-9:00
- Lectures in AM until 12:15
- Free Lunch! Outside in the courtyard
- Afternoons, Evenings, Nights: – Projects!
Lunchtime talks

• In order to get to know each other...
• Each student (there are 20 of you) will give a 5-10 minute talk at lunchtime.
• Three talks per lunch, starting tomorrow.
• This should take us through next Tuesday.
• We will do this in alphabetical order by last name!
Lunchtime talks will be...

- Informal
- Using a flip chart (paper and marker)
- About something *you* have done research-wise or project-wise (or thesis-wise, for some of you...), that you are proud of, or excited about or...
- Outside during lunch! Speak up! And Listen!
- Tightly timed...10 minutes!
Week long Projects: Details

• Logistically, we need roughly an equal number of students in each of the five or six areas.
• Hence, at the end of this week, we will have you express your preferences for areas and why.
• We will have a website of projects up by the end of the week.
• While you are having fun at the zoo, we will assign you to one of the areas -- this should be outside of your “usual” activity.
Week long Projects: Details

• On Monday, you will get your area assignment, and potentially you will get to choose among one or two possible projects.

• The bad news: You don’t get to choose the area, but you get to express a preference – we usually can accommodate your preference.

• The project needs to be completed by Friday of week 2, because Saturday, you are expected to give a professionally done powerpoint presentation on it!

• Projects are done in teams of 2-4, depending on the complexity of the project.
Week long Projects: Details

- The project needs to be completed by Friday night of week 2, because Saturday, you are expected to give a professionally done powerpoint presentation on it!
- We expect about a 30 minute (25+5 for questions) talk -- 20/2.5 == ~8 project presentations: about 4 hours plus lunch
- We should be done by 2:15PM Saturday the 22nd.
- Then, PARTY AT MY HOUSE SATURDAY NIGHT 6:00PM-?! (I will make my famous cashew chili!)
- Bring your suit: We have a pool.
T-shirts!

• You will all receive a t-shirt for your participation.

• Possible designs:
Temporal Dynamics of Learning Center

I got wired at the

2009 TDLC Bootcamp!
August 10-22, 2009 UCSD

THE 2015 TDLC BOOT CAMP

I SURVIVED
\[
\frac{a}{2R_a} \frac{\partial^2 V}{\partial x^2} = C_m \frac{\partial V}{\partial t} + \frac{1}{2\pi a} \frac{\partial}{\partial x} \left( \frac{\pi a}{R_a} \frac{\partial V}{\partial x} \right) = C_m \frac{\partial V}{\partial t} + I_{HH} \\
\frac{dh}{dt} = \alpha_h(V) - (\alpha_h(V) + \beta_h(V)) \cdot h
\]
Points of contact

• General questions about anything:
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