Tech Talk
TT9115: Brain Wave Education Research Project

Saturday, January 28, 2012 11:00-11:45
Room 2009, Moscone West Hall

Dr. Bill Wiecking
Director, HPA Energy Lab
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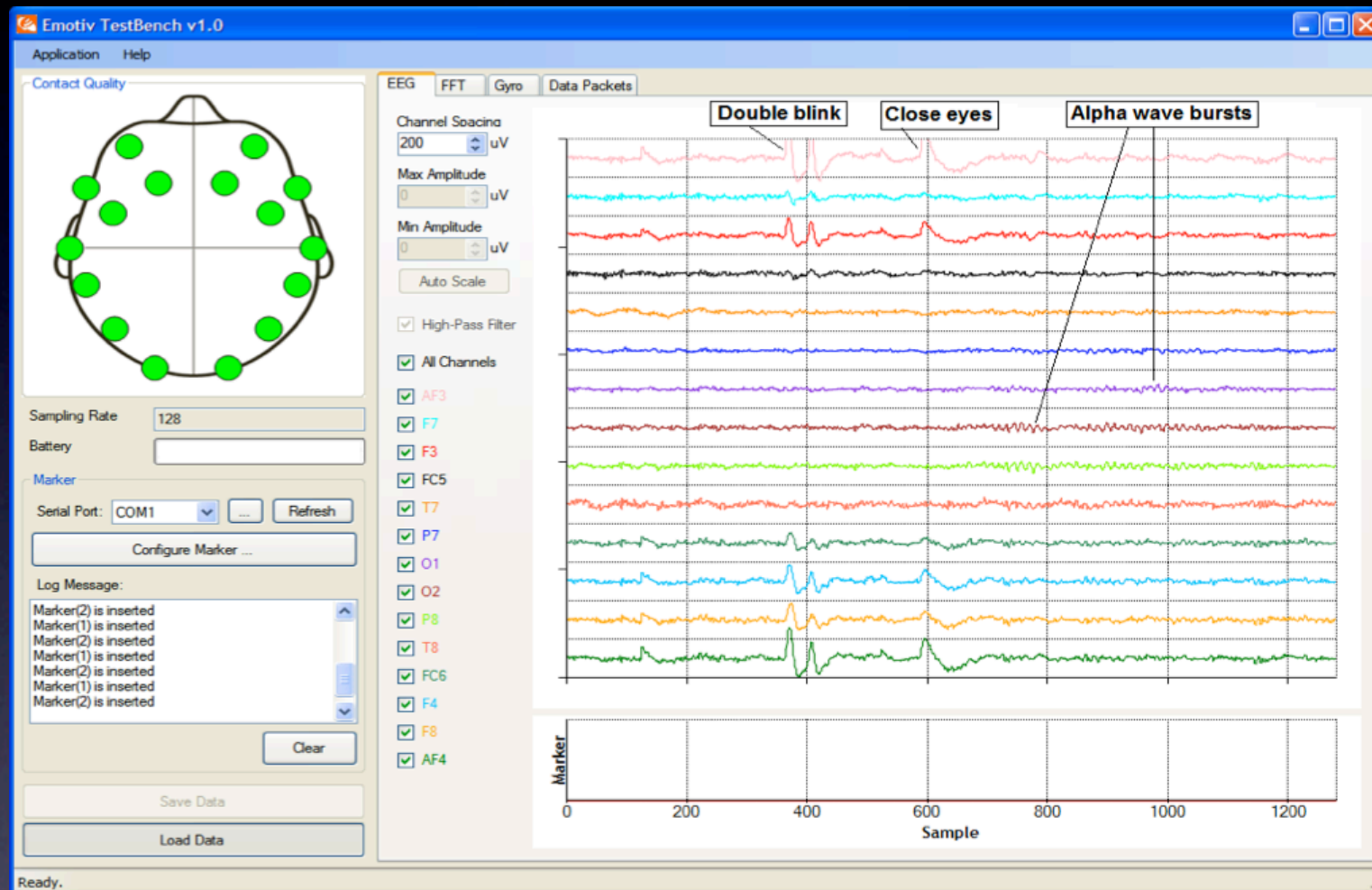Students: Mariko Thorbecke, Phong Hoang, Zane Moran,
Duncan Michael, Bo Bleckel

Emotiv Headset

- TED.com, Tan Le developed wireless headset to study brain waves

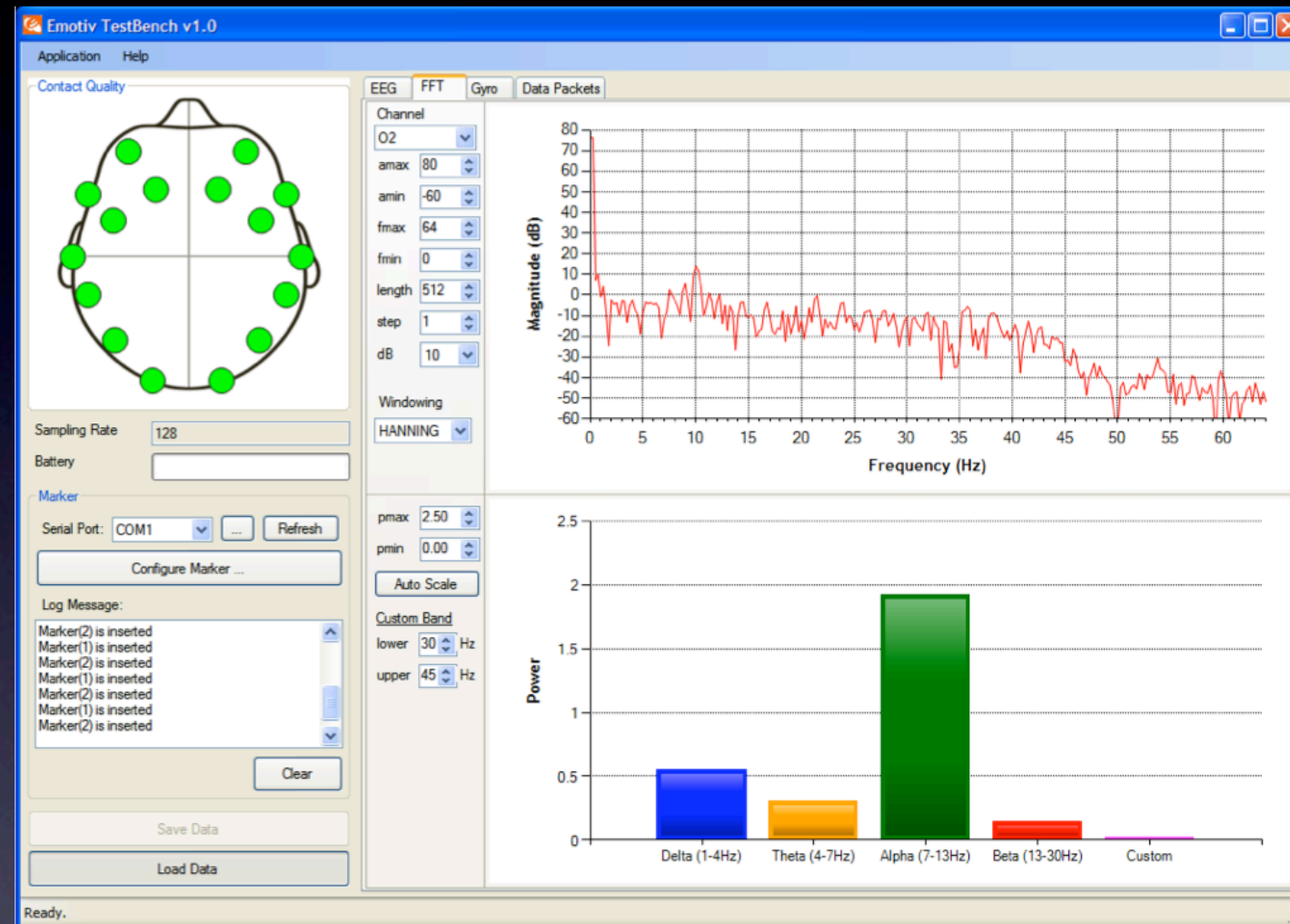- Initial problem: how to control "smart" buildings using the headset

Emotiv Headset: basics

- 14 trace EEG based on contact (saline solution)

- Bluetooth headset relays data to computer

- Software can control games, smart buildings

- Dev Kit can also analyze brain waves

Emotiv Headset: advanced

- Could we use Brain Wave analysis to improve education?

- Combine Emotiv headset with OSX Lion Podcast Producer:

  - Capture video of class

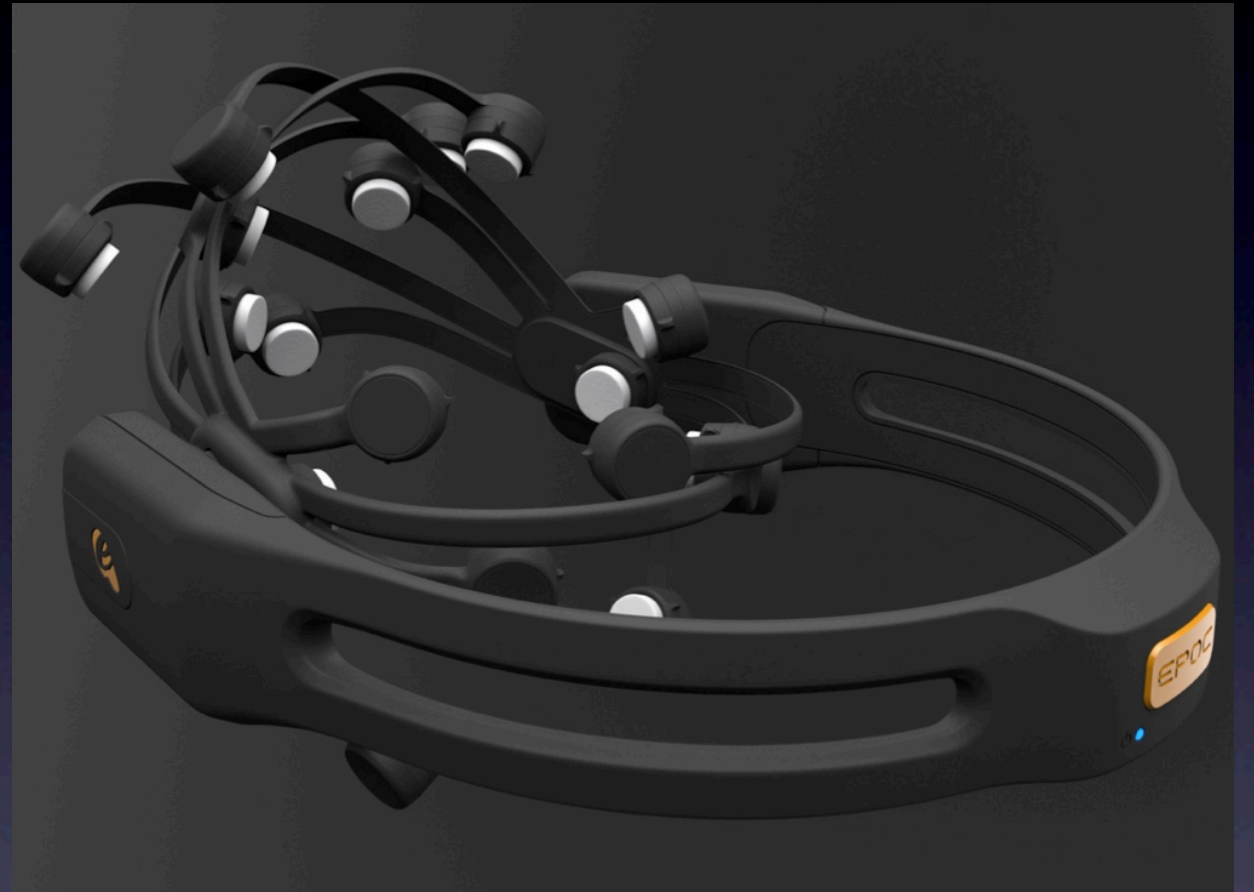 - Capture brain waves

  - Look for connection

Emotiv Headset: Process

- First: training

  - concentrate on moving cube

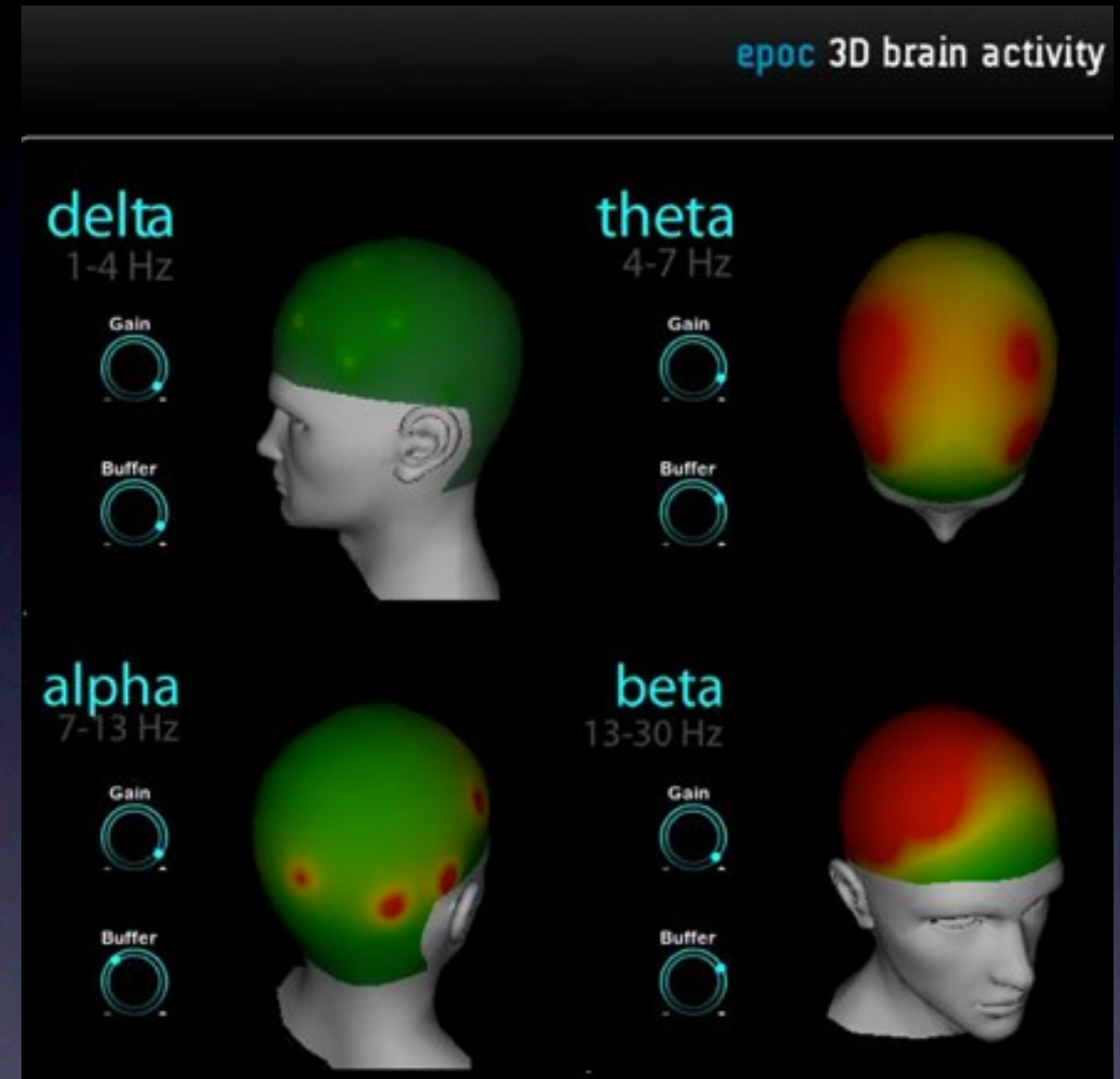 - Program associates discrete patterns with this action

Emotiv Headset: connections

- Crazy accident:

  - Duncan was training while Coldplay was on

  - Duncan stopped training

  - When music came on again, cube moved

- Meaning: headset records conscious and unconscious associations

Emotiv Headset: Education

- Two headsets, two students, same class

    - What modes are most engaging? Which are boring?

    - Are these similar in each student?

    - If not, how to determine most effective mode for each?

epoc 3D brain activity

delta
1-4 Hz
Gain
Buffer

theta
4-7 Hz
Gain
Buffer

alpha
7-13 Hz
Gain
Buffer

beta
13-30 Hz
Gain
Buffer

Emotiv Headset: Learning

- Imagine a student being evaluated with these tools upon entry to a class

- Teacher and student would know strengths and how to leverage them

- Learning in "modal groups" would be more fun, productive, and engaged

- Demo:
  - Training
  - Recording
  - Podcast Producer

- Contact us:
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