*Fall Semester: Dual EEG/fMRI and Structural-Related Analyses*

9/5

Information: Goals of class

Skills: Bash environment, directory hierarchy. Software setup. Server. For loop.

Meet in RB

Assignment: Setup software on local machine

Assignment: For loop (bash)

9/12

Learning to put on the EEG net

Practice with MRI compatible net

Meet in 110 of the TLRB

Assignment: Practice putting on the EEG net (make sure to schedule it)

9/19

EPrime: Communicating with the EEG (Curry) and fMRI software

Learn code for stim tracker in Curry

Know when to press record

Meet in 110 of the TLRB (?)

Assignment: Code EPrime task that syncs with MRI and EEG software (will run it next week to see if it works)

9/26

Collect Dual fMRI/EEG data

Meet in MRI Facility

Assignment: Collect dual fMRI/EEG data

First exit point

10/3 Research Conference- No Class

10/10

EEG Analysis in Curry- Part I

Cleaning data; Preprocessing; Artifact reduction

Meet where??

Assignment: Take data up through preprocessing/artifact reduction

10/17

EEG Analysis in Curry- Part II

Importing image data; Source reconstruction

Meet where??

Assignment: Take data up through source reconstruction

10/24

EEG Analysis in Curry- Part III

Integrating EEG and fMRI analysis

Meet where??

Assignment: Integrate EEG with David’s fMRI data

10/31

Catch-up/buffer day

Finish dual system training and analysis

Finish all assignments

Second Exit Point

11/7

**Nate at conference…** not sure what want to do here?

Could move next week’s up here and have a buffer week the last day of class to catch up on everything before the semester finishes

11/14

Preparation: Huettel pgs 1-15, 57-67

Information: Proton & signal -> voxels -> dicom

Skills: Strings, pathways, variables. Dcm2nii. Nested loops

Meet in RB

Assignment: Render/organize study T1s

Assignment: Nested loops (bash)

11/21

Thanksgiving Break- no class

11/28

Preparation: Huettel pgs 31-42, 88-100

Paper 1: <http://www.sciencedirect.com/science/article/pii/S1053811909010611>

Paper 2: <http://www.sciencedirect.com/science/article/pii/S1053811910010062>

Information: What is, coordinate spaces, limitations (age/sex).

Skills: Super computer. Template construction. Conditionals.

Meet in RB

Assignment: Build template

Assignment: conditional statements (bash)

12/5

Preparation: Huettel pgs 124-156

Information: Masks (whole brain, tissue type)

Skills: Prior construction (brain masks). Arrays.

Meet in RB

Assignment: Render ACT priors

Assignment: Find regions of interest for memory ROI analysis

Assignment: Arrays, counters (bash)

Exit point #3

12/12

Preparation:

Paper 1: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0089456>

Paper 2: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0186071>

Information: ROI segmentation

Skills: Prior construction (ROI masks). Functions.

Meet in RB

Assignment: Render JLF priors

Assignment: Functions (bash)

*Things for Winter Semester: fMRI analyses and doing own data collection/analyses*

Week 1:

Information: BOLD, signal/HRF, contrast in designs

Skills: Slice-time, volume registration, alignment, motion files. Basic regex.

Assignment: Read registration paper

Assignment: Preprocess data

Assignment: Regex (bash)

Week 2:

Information: Registration, moving priors, matrix algebra

Skills: Registration, Skull-strip. SED, AWK

Assignment: Register and skull-strip data

Assignment: SED, AWK (bash)

Week 3:

Information: Study info -> timing files

Skills: Timing files, Deconvolution

Assignment: Create timing files, deconvolve data

Week 4:

Information: Why blur/move to template space

Skills: Blur, Normalization

Assignment: now do it

Week 5:

Information: what is β

Skills: ROI analysis

Assignment: segment, pull βs, run stats on βs.

Assignment: read Eklund, Cox

Week 6:

Information: Modelling noise. RFT vs ACF

Skills: Multiple comparison correction

Assignment: Run ACF

Week 7:

Information: Explanation of MVM

Skills: MVM analysis

Assignment: Run MVM

Week 8:

Information: Explanation of MVM

Skills: MVM analysis, cont’d

Assignment: Get clusters, pull βs, run stats