*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

Assignment: Render/organize study T1s

Assignment: Nested loops (bash)

11/21 - Thanksgiving

11/28

Preparation: Huettel pgs 31-42, 88-100

Lecture: Gradient, Template/Atlas, Registration

Bash: Conditionals, Passing arguments (super computer)

fMRI: Normalizing data, building template

HW: Conditional statements

12/5 Guest Speaker: Ann Weinberg

12/12

Preparation: Huettel pgs 124-156

Lecture: Contrast

Bash: Arrays, awk, cat

fMRI: Masks, ROIs

HW: Array with awk, cat

1/7

Preparation: Get started on reading

Bash: grep, float/int math, append variable

fMRI: S1 - Despike, censor

HW: grep, float, int

1/9

Preparation: Huettel 159-197

Lecture: Neural -> HRF

1/14

Bash: Functions

fMRI: S1 – produce volreg base

HW: Functions

1/16

Preparation: Huettel 211-265

Lecture: Properties of BOLD

1/21 MLK day

1/23

Bash: Regex (string manipulation)

fMRI: S1 - rigid alignment, non-linear alignment

HW: Regex

1/28

Preparation: Huettel 271-294

Lecture: Signal, Noise

1/30

Preparation: Maybe get a start on the Taylor 2018 paper

fMRI: S1 – calc volreg, concat calcs

2/4

Preparation: Taylor 2018 FMRI processing with AFNI: some comments and corrections on “Exploring the Impact of Analysis Software on Task fMRI Restuls”

Lecture: Something about paper

fMRI: S1 - moving data

2/6

fMRI: S1 – extents masking

2/11

fMRI: S1 - masking

2/13

fMRI: S1 - scale

2/19

fMRI: S2 – motion, timing files

2/20

fMRI: S2 - Deconvolve

2/25

fMRI: S2 - Deconvolve

2/27

fMRI: S2 - Post calcs, print

3/4

fMRI: S3 – censored TRs, IQR

3/6

fMRI: S3 – 3%, print out

3/11

Preparation: Eklund 2016 Cluster failure: why fMRI inferences for spatial extent have inflated false-positive rates

fMRI: S4 – Intersection mask

3/13

Preparation: Cox 2017 FMRI Clustering in AFNI: False Positive Rates Redux

fMRI: S4 – GM mask -> GM+Intersection mask

3/18

Preparation: Cox 2018 Equitable Thresholding and Clustering

fMRI: S4 - ETAC

3/20

fMRI: S4 – Render clusters

3/25

fMRI: AFNI – tables, masks

3/27

fMRI: S5 – mine clusters

4/1 Guest Speaker: Ann Clawson

4/3

fMRI: S5 – cluster betas

4/8 Process collected data

4/10 Guest Speaker: Matt Miller

4/15 Process collected data

4/17 Process collected data