Investigating functional hierarchies in various tasks performed by macaques

The following outlines the data pipeline, based upon the code in the Github repository. This also lists all relevant literature.

The code is typically set up to compare to areas, in looking for directed, causal influences. The analyses include the power spectrum, coherence and granger causality.

There are two datasets being used: one attention based task (

Bosman *et al*. (2012), Bastos *et al*. (2015)) and one decision-making based task (Hunt *et al*. (2018)

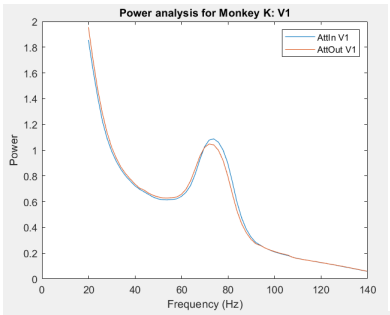
Power
Toolbox: Fieldtrip

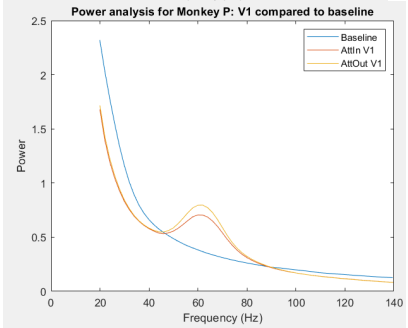
Bosman *et al*. (2012), Bastos *et al*. (2015)

✓ Bipolar derivatives
✓Plotting power (includes comparison to baseline as well as between two ROIs)

Hunt *et al*. (2018)

✓ Extract trials from dataset
✓group channels and data according to trials and recording sessions
✕ Arrange data correctly according to ft_datatype_raw
✕ Plot power
? Is there a baseline for comparison





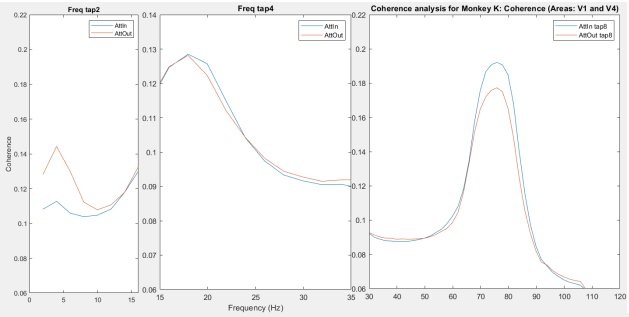
Coherence
Toolbox: Fieldtrip

Bosman *et al*. (2012), Bastos *et al*. (2015)

✓ Plot coherence between V4 and V1

Hunt *et al*. (2018)

TBC at a later stage



Coherence analysis for Monkey K: Coherence (Areas: V1 and V4)

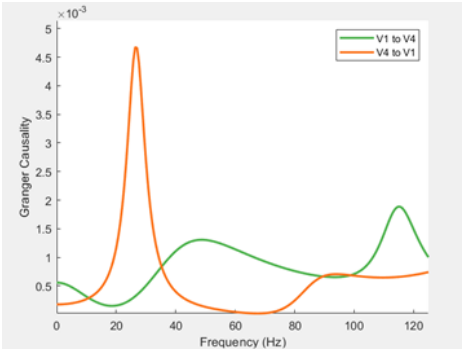
Granger causality
Toolbox: MVGC

Bosman *et al*. (2012), Bastos *et al*. (2015)

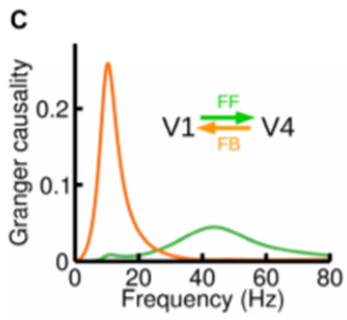
✓ Run in serial locally and on cluster (two areas) However this is too computationally intensive
✓ Plot granger two ROIs
✓Run in parallel locally
? Run in parallel on cluster (error with variables)
? Random assignment of channels

Hunt *et al*. (2018)

Dependent on pipeline produced for other data



Preliminary Plot



Mejias *et al*., 2016