PFC Ripple project workflows

Extract PFC and CA1 Ripples – Same parameters (3SD above mean)

Extract Sleep – TD Ratio and immobility for at least 1min (NO spindle requirement)

**Get coordinated and non coordinated ripples in both areas**

-jds\_getripples\_SWS – Confines extracted rippletimes to SWS

-jds\_getnoncoordripples\_SWS - Extracts ripples in respective area that are non coordinated

-jds\_getcoordripples\_SWS – Extracts ripples in respective area that are coordinated

-jds\_getripplecoordination\_SWS\_concatrips – Extracts CA1-PFC concatenated ripples times

-jds\_getctxspindlesSWS

-jds\_extractdeltawaves\_zugaro – Extracts delta waves using the method in Todorova and Zugaro

**Ripple triggered wavelet**

-jds\_triggered\_wavelet – Ripple triggered wavelet figures. For each epoch, tetrode with most detected ripples used as LFP tetrode

**Cross-correlation analysis**

-jds\_CA1\_PFCrips\_xcorr\_singleday – Computes and plots cross-correlation for different LFP events. Can use for ripple-ripple, ripple-spindle, etc.

**Ripple rate in run and sleep**

-jds\_sleepripplerate\_comparerunsleep – Calculates ripple rate (ind, coord) during run and sleep in CA1 and PFC

**Reactivation analysis**

-jds\_assemblyReactivation\_ICA – Generates files that contain assembly information. Assemblies during sleep are generated using the template from the preceding run session

**Assembly member cell analysis**

-jds\_assemblyContribSpatialCorr – Gets spatial correlation for member cells vs non-member cells

**Run ripple triggered assembly strength**

-jds\_noncoordrippletriggered\_assemblystrength\_M – Ripple triggered assembly strength for CA1 or PFC assemblies. Can be modified to align to different ripples (independent, coordinated, etc).

- jds\_rippletriggered\_compareStrength\_M – Compares reactivation strength for independent vs coordinated ripples. Bins used for calculation are +-200ms around ripples start time.

**Ripple cofiring**

-jds\_compareRipCofiring\_coordNoncoord\_members – Compares ripple cofiring for member cells of CA1 or PFC assemblies

**Single cell ripple modulation**

Get modulation state of cells during NC ripples

-DFSjds\_getripalignspiking – Calculates modulation state for single cells aligned to ripples (independent, coordinated, CA1, PFC). Similar to existing file in lab code base. Modified to use different ripples

**Replay anaylsis**

-jds\_PCC\_replay\_decoding\_CA1\_allcells – Replay decoding. Calculates weighted correlation, rZ, and sequence degradation values for each cell shuffle.

-jds\_replay\_decoding\_CA1 – Replay decoding using monte carlo shuffle significance test

**Place cell analysis – Run**

-jds\_CA1mod\_getFieldMetricsPrePost – Calculates number of place fields and field width

-jds\_CA1mod\_spatialinfo – Calculates spatial info for CA1 modulated cells

-jds\_theta\_phaselocking\_modcells – Theta phase locking for CA1 modulated cells

-jds\_PPC\_thetalockingstrength – Calculates the pairwise phase consistency measure for CA1 modulated cells

**Ripple activity**

-jds\_comparePFCripmod\_SWRparticipation

-jds\_comparePFCripmod\_SWRparticipationAwake

-These two files reports firing rate, SWR firing rate gain, SWR participation, etc. for CA1 modulated cells during sleep and wake

**Prediction**

- jds\_GLM\_ripplepredictionArea – Prediction of ripple type using either CA1 or PFC spikes

- jds\_GLM\_CA1spikePrediction\_allep\_yu – CA1 or PFC spike prediction during ripples.