Calcium traces & bouton properties

_ss_2pCalcium.dff	[delta-F-over-F] (nSamples, nROIs) Calcium traces of all ROIs for all experiments (stimulus presentations) performed during one imaging session
_ss_2pCalcium.timestamps	[s] (nSamples) Time stamps for calcium traces; NOTE: given times are for plane, add _ss_2pPlanes.delay for ROIs belonging to other imaging planes (specified in _ss_2pRois._ss_2pplanes)
_ss_2pRois._ss_2pplanes	[integer] (nROIs) Imaging plane of each ROI
_ss_2pRois.ids	[integer] (nROIs) ID of each ROI (only relevant to match to raw data)
_ss_2pRois.xyz	[double] (nROIs, 3) 3D position of ROIs in imaging volume
_ss_2pRois.isGad	[integer] (nROIs) NaN for boutons
_ss_2pPlanes.delay	[s] (nPlanes) Temporal delay for each plane relative to plane 1

Behaviour

_ss_running.speed	[double] (nSamples) Trace of running speed of animal
_ss_running.timestamps	[s] (nSamples) Time stamps of running trace
eye.diameter	[arb. Units] (nFrames) Pupil size
eye.xyPos	[arb. units] (nFrames) Center position of pupil
eye.timestamps	[s] (nFrames) Time stamps for pupil size and position

Stimuli

_ss_grating.intervals	[s] (nTrials,2) On- and offset times of gratings
_ss_grating._ss_gratingID	[integer] (nTrials) ID of grating in each trial
_ss_gratingID.directions	[angles] (nGratings) Direction of movement of grating; NaN if blank was shown
_ss_sparseNoise.times	[s] [nTrials] Time of each stimulus frame (map of visual sparse noise pattern)
_ss_sparseNoise._ss_sparseNoiseID	[integer] (nTrials) ID of sparse noise frame
_ss_sparseNoiseArea.edges	[visual degree] (4) Edges (left, right, bottom, top) of sparse noise frames within visual field
_ss_sparseNoiseID.map	[integer] (nFrames, nRowPixels, nColPixels) Map of visual sparse noise pattern for each stimulus frame; -1 if black, 1 if white, 0 if gray
_ss_recordings.darkness_intervals	[s] (1, 2) Start and end of complete darkness
_ss_recordings.gratings_intervals	[s] (1, 2) Start and end of gratings experiment
_ss_recordings.grayScreen_intervals	[s] (1, 2) Start and end of gray screen presentation
_ss_recordings.sparseNoise_intervals	[s] (1, 2) Start and end of sparse noise experiment

Results of further analyses

_ss_corrsPupil.rhosGratings	[double] (nROIs) Correlation strength of boutons with pupil size during presentation of gratings
_ss_corrsPupil.nullRhosGratings	[double] (nROIs, 500) Correlation strength of boutons with pupil size during presentation of gratings after randomly shifting the pupil trace
_ss_corrsRunning.rhosGratings	[double] (nROIs) Correlation strength of boutons with running speed during presentation of gratings
_ss_corrsRunning.nullRhosGratings	[double] (nROIs, 500) Correlation strength of boutons with running speed during presentation of gratings after randomly shifting the running trace
_ss_corrsRunning.rhosDark	[double] (nROIs) Correlation strength of boutons with running speed during darkness
_ss_corrsRunning.nullRhosDark	[double] (nROIs, 500) Correlation strength of boutons with running speed during darkness after randomly shifting the running trace
_ss_gratingTrials.amplitudes	[delta-F-over-F] (nGratings, nRepetitions, nROIs) Estimated response amplitude for each presentation of grating (estimate involved estimating response kernel)
_ss_gratingTrials.largePupil	[logical] (nGratings, nRepetitions) True if this trial was categorized as large pupil trial (pupil is mostly larger than median size)
_ss_gratingKernels.dff	[delta-F-over-F] (nSamples, nROIs) Response kernel of each ROI to grating stimulus
_ss_gratingKernels.timestamps	[s] (nSamples) Time of estimated response kernels relative to stimulus onset
_ss_gratingPredictions.dff	[delta-F-over-F] (nSamples, nROIs) Predicted calcium trace of bouton based on fitted response kernels for gratings and fitted kernel amplitude for each trial
_ss_gratingPredictions.timestamps	[delta-F-over-F] (nSamples, nROIs) Time of predicted calcium traces
_ss_tuning.curvesLarge	[double] (nROIs, 360) Fitted tuning curve for large pupil: response amplitude for directions of movement from 1 to 360 degrees
_ss_tuning.curvesSmall	[double] (nROIs, 360) Fitted tuning curve for small pupil: response amplitude for directions of movement from 1 to 360 degrees
_ss_tuning.explVars	[double] (nROIs) Cross-validated explained variance of both fitted tuning curves
_ss_tuning.isSuppressed	[integer] (nROIs) 1 if suppressed by gratings, -1 if driven by gratings, NaN if not responsive to gratings

_ss_tuning.parametersLarge	[double] (nROIs, 5) Parameters defining fitted tuning curve to responses during large pupil; 1. Preferred direction, 2. Response amplitude, 3. Direction selectivity, 4. Offset from zero, 5. Tuning width
_ss_tuning.parametersSmall	[double] (nROIs, 5) Parameters defining fitted tuning curve to responses during small pupil; 1. Preferred direction, 2. Response amplitude, 3. Direction selectivity, 4. Offset from zero, 5. Tuning width
_ss_tuning.nullParametersLarge	[double] (nROIs, 5, 200) Parameters of fitted tuning curves to responses during large pupil after randomly shuffling the trial labels for small and large pupil 200 times
_ss_tuning.nullParametersSmall	[double] (nROIs, 5, 200) Parameters of fitted tuning curves to responses during small pupil after randomly shuffling the trial labels for small and large pupil 200 times
_ss_rf.explVars	[double] (nROIs) Cross-validated explained variance for receptive field and running kernel
_ss_rf.explVarsRunning	[double] (nROIs) Cross-validated explained variance for running kernel only
_ss_rf.explVarsStim	[double] (nROIs) Cross-validated explained variance for receptive field only
_ss_rf.lambdasRunning	[double] (nROIs) Lambda value used to regularize fitting of running kernels
_ss_rf.lambdasStim	[double] (nROIs) Lambda value used to regularize fitting of receptive field
_ss_rf.maps	[double] (nROIs, nRowPixels, nColPixels, nSamples, 2) Fitted receptive field spanning nRowPixels and nColPixels and nSamples of time points; one RF for the ON field (1) and one RF for the OFF field (2)
_ss_rf.pValues	[double] (nROIs) P-value of fitted receptive field
_ss_rfDescr.edges	[visual degree] (1, 4) Edges (left, right, bottom, top) of receptive fields within visual field
_ss_rfDescr.timestamps	[s] (1, nSamples) Time points of fitted receptive fields relative to onset of stimulus frame
_ss_rfRunningKernels.dff	[delta-F-over-F] (nSamples, nROIs) Fitted kernel describing the impact of running speed on responses to sparse noise
_ss_rfRunningKernels.timestamps	[s] (nSamples) Time points of fitted running kernel relative to onset of stimulus frame