XenMap

MATLAB Scripts for calcium analysis in: Topographic map formation and the effects of NMDA receptor blockade in the developing Xenopus retinotectal system. Li, VJ., Schohl, A., Ruthazer, E. (2021)

-Analysis

an_discont.m

Calculates “local discontinuity”: the mean difference in receptive field position (phase) of a pixel to all neighbouring pixels within a defined pixel radius.

(Example data is from animal shown in Fig.1)

an_gradaxis.m

Displays 3D phase map and calculates map gradient vector.

(Example data is from animal shown in Fig.2)

an_mapcompare.m

Calculates difference score between 2 maps (or a map and its scrambled version).

(Example data is from animal shown in Fig.1 and S1 Fig.)

an_rfsharp_cell.m

Calculates “receptive field sharpness” for cell bodies.

(Example data is from animal shown in S7 Fig.)

an_rfsharp_neuropil.m

Calculates “receptive field sharpness” for neuropil.

(Example data is from animal shown in S7 Fig.)

-Mapping

map_drifft.m

For calculating phase maps: Performs fast Fourier transform on pixel-wise calcium traces and calculates phase at stimulus frequency.

map_drifft_rev.m

For calculating phase maps: Calculates absolute phase map by taking difference of phase maps acquired from opposite direction drifting bar stimuli.

(Example data is from animal shown in Fig.1)