

popeye: a population receptive field estimation tool

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Software

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Summary

Popeye is a Python library for designing, estimating, and validating population receptive field (pRF) models. The pRF model is a quantitative model of the cumulative response of the population of neurons contained within a single fMRI voxel (SO and BA 2008). The pRF model allows neuroscientists to interpret and predict the response of a voxel to various perceptual stimuli (Thomas JM et al. 2014) and cognitive demands (Harvey BM et al. 2013), both in cortex and in subcortical nuclei (DeSimone K, Viviano JA, and KA 2015).

<https://kdesimone.github.io/popeye>

References

- DeSimone K, Viviano JA, and Schneider KA. 2015. “Population Receptive Field Estimation Reveals Two New Maps in Human Subcortex.” *Journal of Neuroscience* 35. doi:10.1523/jneurosci.3840-14.2015.
- Harvey BM, Klein BP, Petridou N, and Dumoulin SO. 2013. “Topographic Organization of Numerosity in the Human Parietal Cortex.” *Science* 341. doi:10.1126/science.1239052.
- SO, Dumoulin, and Wandell BA. 2008. “Population Receptive Field Estimates in Human Visual Cortex.” *NeuroImage* 39. doi:10.1016/j.neuroimage.2007.09.034.
- Thomas JM, Huber E, Stecker E, Boynton G, Saenz M, and Fine I. 2014. “Population Receptive Field Estimates in Human Auditory Cortex.” *NeuroImage* 109. doi:10.1016/j.neuroimage.2014.10.060.