Yasha Sheynin

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Education

McGill University
Ph.D. Candidate, Neuroscience, 2016 - present
Fields: Neural Plasticity, Visual Psychophysics, Computational Modeling
Advisor: Robert F. Hess, PhD.
Expected Graduation: July 2019

University of California, Berkeley
B.A., Cognitive Science, 2015
Concentrations: Cognitive Neuroscience and Computer Science
Advisors: Michael Silver, PhD., and Dennis Levi, PhD.

Proposed Dissertation

"Experience-driven plasticity in adult binocular vision"
Neuroplasticity provides the exciting opportunity to repair faulty neural pathways in different disorders of brain function. My research uses non-invasive behavioral and computational modeling methods to investigate the degree to which binocular visual function can be modified or improved in adulthood.

Awards and Fellowships

McGill Graduate Excellence Award
Integrated Program in Neuroscience, $22,000, 2016-2018
UC Berkeley Summer Undergraduate Research Fellowship
$5,000, 2015
UC Berkeley Dean's List
2014 - 2015

Languages and Skills

English (native), Russian (advanced), French (business proficient)
MATLAB, LaTeX, Python, R, SPSS, SciPy, PyTorch, Adobe Suite

Research Projects

"Experience-driven plasticity in binocular vision"
Depriving one eye of visual information for a short duration alters the relative balance of the two eye's individual contributions to binocular vision. My work investigates different ways binocular vision can be modified or improved by temporarily depriving one eye's input. Using statistical learning tools as well as other computational approaches, I am interested in evaluating models of binocular visual function to better understand the limitations of adult brain plasticity in general.

Research Projects (continued)

"Cholinergic enhancement of adult brain plasticity "

Studies in animal and human models suggest that neuromodulators can enhance adult brain plasticity in general. Specifically, acetylcholine has been shown to improve certain aspects of visual function and plasticity in adulthood. My research, in collaboration with Prof. Elvire Vaucher at the University of Montréal, builds on this work to evaluate the mechanisms of ACh's effect on adult visual brain plasticity.

"Functional Imaging of Stereopsis Perceptual Learning in Amblyopia "
I worked with Adrien Chopin, Ph.D, Dennis Levi, Ph.D, and Michael Silver, Ph.D, on a study to evaluate the changes associated with perceptual learning of stereoscopic stimuli in amblyopic patients. My role consisted of programming psychophysics experiments using MATLAB, conducting clinical assessments of amblyopic patients, administering clinical rehabilitation training sessions on amblyopic patients, administering fMRI scans, conducting data analysis of clinical data, and contributing to the implementation of a Multi-Voxel Pattern Analysis (MVPA).

"Top-down influences on perceptual selection during binocular rivalry"
I worked with Rachel Denison, Ph.D, on a series of binocular rivalry experiments to assess the role of statistical learning in conscious visual perception. We examined whether implicit knowledge of a learned sequence of stimuli would affect the selection of either a learned or unlearned stimulus during binocular rivalry.

Research Interests

Neural plasticity in adulthood
Applications of machine learning and AI in neuroscience research
Neuroimaging and data mining

Publications

Sheynin Y, Proulx S, and Hess RF (2019) *Temporary monocular occlusion facilitates binocular fusion during rivalry.* Journal of Vision. *In Review.*

Sheynin Y, Chamoun M, Baldwin AS, Rosa-Neto P, Hess RF and Vaucher E (2019) *Cholinergic potentiation alters perceptual eye dominance plasticity induced by a few hours of monocular patching in adults.* Front. Neurosci. 13:22. *doi: 10.3389/fnins.2019.00022*

Denison, R. N., **Sheynin, J.**, and Silver, M. A. (2016). *Perceptual suppression of predicted natural images.* Journal of Vision, 16(13). *doi: 10.1167/16.13.6*

Presentations

Monocular patching enhances the visibility of fused binocular percepts during rivalry? **Sheynin Y**, Proulx S, and Hess RF (2018) Presented at Vision Science Society 2017, St. Petersburg, Florida.

Cholinergic facilitation of short term monocular deprivation-induced plasticity? **Sheynin, J.**, Chamoun, M., Baldwin, A., Vaucher, E., Hess, R. Presented at European Conference for Vision and Perception, August 2017, Berlin, Germany.

Short term patching does not affect interocular correlation sensitivity. **Sheynin, J.**, Reynaud, A., Hess, R. Presented at Vision Science Society 2017, St. Petersburg, Florida.

Bringing completely- stereoblind amblyopes to stereo-recovery. Chopin, A., Silver, M., **Sheynin, J.**, Ding, J. and Levi, D. M., Presented at Annual European Vision Science Summit, Manchester, UK, March 2017

Cholinergic effects on short term monocular deprivation. **Sheynin, J.**, Reynaud, A., Hess, R. Presented at Canadian Amblyopia Research Network Conference 2017, Halifax, Nova Scotia.

The optimal time scale of statistical summary in human auditory perception. Piazza, E., Dension, R., Sweeny, T., **Sheynin, J**, Silver, M, Whitney, D. (Presented at the Society for Neuroscience, October, 2014

Presentations

The optimal time scale of statistical summary in human auditory perception. **Sheynin, J**, Piazza, E., Presented at the California Cognitive Science Conference, Berkeley, CA. May 2014.

Statistical learning facilitates the identification of targets in perceptual competition with learned images. Dension, R., **Sheynin, J.**, Silver, M.,Presented at the California Cognitive Science Conference, Berkeley, CA. May 2014.

Temporal Characteristics of Ensemble Coding in Audition. **Sheynin, J.**, Bloch, A., Piazza, E. (May, 2013). Presented at the Berkeley Interdisciplinary Research Conference, 2013.

Empirical study of the role of aesthetic issues in spatial composition, scene perception architecture, spatial-taxon distribution and entry-level object labels. **Sheynin, J.**, Barghout, L. (2013, May). Presented at Vision Science Society, 2013.

Professional Affiliations

American Association for the Advancement of Science
2016 - present
Vision Science Society
2013 - present
Psi Chi - Psychology Honors Society
2012 - present

Salient Graduate Coursework

Applied Machine Learning
McGill University, 2018
Statistics for the Neurosciences
McGill University, 2017
Neural Computation
University of California, Berkeley, 2015

Certifications

Dataquest.io Advanced Machine Learning
2018
Dataquest.io Advanced Python Programming
2018
Henry H. J. Wheeler Berkeley Imaging Certification
Certification for administering fMRI research using a
3T Siemens MRI scanner
2015

Work Experience

Executive Manager
Hack Reactor, San Francisco, California, 2015
I worked as the executive manager to the CEO of a company that specialized in offering software enginneering intensives.

Academic Tutor
Classroom Matters, Berkeley, CA, 2015 - 2016
I tutored AP level coursework and SAT/ACT test preparation.

References

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Michael Silver, PhD.
School of Optometry
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