

# Tyler MANNING

## Vision Scientist | Neuroscientist

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Researcher skilled in designing, performing, and analyzing experiments in visual perception

## SKILLS

Psychophysics	Display assembly, Psychtoolbox (experimental design, signal recording)
Data analysis	MATLAB (signal processing, descriptive statistics, image statistics), Shell scripting
Computational modeling	MATLAB (Ideal observer models, Bayesian statistics)
Data visualization	MATLAB, Inkscape
Productivity software	LaTeX, Microsoft Office, LibreOffice, Google Workspace

## EXPERIENCE

Sept 2019 - Present	<b>Postdoctoral Researcher, UNIVERSITY OF CALIFORNIA, BERKELEY, Berkeley, CA</b> <ul style="list-style-type: none"><li>➤ Designed and performed experiments investigating the influence of experience with binocular image statistics on visual perception</li><li>➤ Designed, conducted, and analyzed behavioral response data from 6+ perceptual tasks on standard visual displays and head-mounted devices</li><li>➤ Published 1 first-author paper, published 1 coauthored paper, 2 papers in prep</li><li>➤ Obtained and managed competitive F32 NRSA grant from NIH covering \$133,872 in research costs</li><li>➤ Organized multidisciplinary team of experimentalists and theoreticians from multiple universities</li></ul> <div>Psychophysics   Computational modeling   MATLAB   Psychtoolbox   Inkscape   LaTeX</div>
Sept 2013 - June 2019	<b>Graduate Student Researcher, UNIVERSITY OF CALIFORNIA, DAVIS, Davis, CA</b> <ul style="list-style-type: none"><li>➤ Designed and performed experiments investigating neurophysiology of image stabilization during eye movements</li><li>➤ Designed analysis pipeline for analyzing electrophysiological and eye movement data</li><li>➤ Developed expert knowledge of spatial vision, object motion, eye-tracking, and self-motion perception in humans and non-human primates</li><li>➤ Published 2 first author papers based on research</li><li>➤ Served as voting member on Graduate Admissions, Student Health Insurance Program, as well as the UCD Graduate Student Association committees</li></ul> <div>Electrophysiology   Eye tracking   Computational modeling   MATLAB   Inkscape</div>

## PROJECTS

<b>IMAGE STATISTICS AND BEHAVIOR CONSTRAIN NEURAL CODES FOR BINOCULAR DISPARITY</b> <a href="https://github.com/tsmanning/DisparityInfoProject">https://github.com/tsmanning/DisparityInfoProject</a> <a href="#">Society for Neuroscience 2021</a> Here, we investigated how the visual system's representation of binocular disparity varies between brain areas depending upon optimization goals for either information preservation or perceptual discriminability.	2020 - 2022
<b>INFLUENCE OF PERCEPTUAL INFERENCE ON MOTION PERCEPTION</b> <a href="https://github.com/tsmanning/bayesIdealObserverMoG">https://github.com/tsmanning/bayesIdealObserverMoG</a> <a href="#">Vision Sciences Society 2022</a> This project has focused on how humans transform retinal motion into world motion and make inferences about speed in the face of measurement uncertainty.	2019 - 2022
<b>PERCEPTUAL ADAPTATION TO DISTORTIONS FROM LENSES WITH UNEQUAL MAGNIFICATION</b> <a href="#">Journal of Vision 2022</a> I contributed the experimental design and analyses in Iona McLean's paper investigating how people adapt to visual distortions to shape and slant produced by optics with different amounts of magnification.	2019 - 2022
<b>IMAGE STABILIZATION IN HEADING PERCEPTION</b> <a href="https://github.com/tsmanning/EfferenceCopyMST">https://github.com/tsmanning/EfferenceCopyMST</a> <a href="#">Journal of Neuroscience 2019</a> In this study, I investigated how the brain corrects for distortions in the retinal images while estimating self-motion from optic flow.	2014 - 2019

## EDUCATION

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- 2019 **PhD, Neuroscience**, University of California, Davis, Davis, CA, USA  
2013 **BSc, Physiology**, McGill University, Montréal, QC, Canada

## SELECTED PUBLICATIONS

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- 2022 **Manning TS**, Naecker BN, McLean IR, Rokers B, Pillow JW, Cooper EA. A general framework for inferring Bayesian ideal observer models from psychophysical data. [DOI:10.1523/ENEURO.0144-22.2022](https://doi.org/10.1523/ENEURO.0144-22.2022)
- 2022 McLean IR, **Manning TS**, Cooper EA. Perceptual adaptation to continuous versus intermittent exposure to spatial distortions. IOVS. 63 (5):29. [DOI:10.1167/iows.63.5.29](https://doi.org/10.1167/iows.63.5.29)
- 2019 **Manning TS**, Britten KH. Retinal stabilization reveals limited influence of extraretinal signals on heading tuning in the medial superior temporal area. J Neurosci. 39 (41) 8064-8078. [DOI:10.1523/JNEUROSCI.0388-19.2019](https://doi.org/10.1523/JNEUROSCI.0388-19.2019)
- 2017 **Manning TS**, Britten KH. Motion processing in primates. Oxford Research Encyclopedia of Neuroscience. [DOI:10.1093/acrefore/9780190264086.013.76](https://doi.org/10.1093/acrefore/9780190264086.013.76)

## AWARDS AND FELLOWSHIPS

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- 2021 - Present **Ruth L. Kirschstein NRSA Individual Postdoctoral Fellowship**, NEI Grant F32 EY032321
- 2022 **Vision Sciences Society Travel Award**
- 2019 - 2020 **Training Program in Vision Science**, NEI Grant T32 EY007043 (PI: Levi DM)
- 2018 **CoSMo: Summer School in Computational Sensory-Motor Neuroscience**

## INTERESTS

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Stereovision

Motion perception

Spatial perception

3D vision

Computational neuroscience

Innovative display technologies

Navigation

Accessibility technology