

PROFESSIONAL SUMMARY

Optometrist committed to advancing current understanding of vision through research. Possesses a solid foundation in clinical optometry. Pursuing a Ph.D. in Vision Science to explore research interests in visual perception, binocular vision, and eye movements.

EDUCATION

University of California, Berkeley	2025 –
Ph.D. Candidate, Vision Science	
University of California, Berkeley	2021 – 2025
O.D., Doctor of Optometry, <i>Honours in Research</i>	
McGill University	2017 – 2021
B. Sc., Neuroscience, <i>Graduation with Honours</i>	

AWARDS AND FELLOWSHIPS

Essilor OD/PhD Scholarship, American Academy of Optometry	2025 –
School of Optometry Departmental Award, Herbert Wertheim School of Optometry	2021 – 2025
Ming Pow Low Professional Student Scholarship, Herbert Wertheim School of Optometry	2024
Dennis and Marilyn Levi Professional Student Scholarship, Herbert Wertheim School of Optometry	2023
Summer Research Grant, Herbert Wertheim School of Optometry	2022
Dr. Richard and Carolina J. Walls “Best in the West” Major Renewable Scholarship, McGill University	2017 – 2021
Graduation on Dean’s Honour List, McGill University	2021
Tomlinson Education Award for Change, McGill University	2020
Tomlinson Engagement Award for Mentoring, McGill University	2018, 2019
Recruitment Scholarship, Vision Health Research Network	2018
Faculty of Science Scholarship, McGill University	2018
Achievement Scholarship, Government of British Columbia	2017
District/Authority Scholarship, Government of British Columbia	2017

PUBLICATIONS

C.T. Friedman, M. Wang, T. Yerxa, B.A. Arseneau, X. Huang, and E.A. Cooper. Statistical regularities in natural scenes that support figure-ground segregation by neural populations. *PLOS Computational Biology*, 21(10), e1013573. <https://doi.org/10.1371/journal.pcbi.1013573>

B.M. Chin, M. Wang, L.T. Mikkelsen, C.T. Friedman, C.J. Ng, M.A. Chu and E.A. Cooper. A Paradigm for Characterizing Motion Misperception in People with Typical Vision and Low Vision. *Optometry & Vision Science*, 101(5), 252-262, 2024. <https://doi.org/10.1097/OPX.0000000000002139>

D.R. Fox, A. Ahmadzada, C.T. Friedman, S. Azenkot, M. Chu, R. Manduchi and E.A. Cooper. Using Augmented Reality to Cue Obstacles for People with Low Vision. *Optics Express*, 31(4): 6827-6848, 2023. <https://doi.org/10.1364/OE.479258>

POSTERS

C.T. Friedman*, M. Wang, X. Huang and E.A. Cooper. Natural scene statistics of figure-ground motion in MT receptive fields. *Journal of Vision*, 23:4934, 2023

C.T. Friedman*, A.S. Baldwin, R.F. Hess. A proposed test of stereovision to identify local retinal abnormalities. *Ann Eye Sci* 2019;4:AB019.
**originally published as “C. T. Wang” and “T. Wang” respectively*

TALKS

Learning Disparity Selectivity from Natural Scene Statistics. *UC Berkeley School of Optometry T35 Program Final Presentation*, 2022

Quantifying and Mapping Stereopsis in Regions Around the Central Visual Field Through Use of Eye-Tracking Virtual Reality Technologies. *McGill Ophthalmology Research Day*, 2020.

RELEVANT EXPERIENCE – RESEARCH

University of California, Berkeley, Herbert Wertheim School of Optometry and Vision Science

Advisor: Dr. William Tuten

PhD Rotation Student

08/2025 –

- Coded an experiment measuring foveal/perifoveal contrast sensitivity function using an adaptive optics scanning laser ophthalmoscope in world- and retina-fixed stimulus presentation conditions to assess the role of fixational eye movements on contrast sensitivity

University of California, Berkeley, Herbert Wertheim School of Optometry and Vision Science

Advisor: Dr. Emily A. Cooper

Research Assistant & O.D. Honors Thesis

09/2021 –

- Built and calibrated a video-recording set-up to collect high-FPS datasets to examine motion and disparity statistics of urban and natural scenes.
- Coded an automated data processing pipeline on MATLAB to examine video stills, employed several computer vision algorithms to calculate optic flow, generated semantic segmentations of video stills using pretrained computer vision object recognition models with the Detectron2 codebase, and sampled motion and disparity data in spaces of the same spatial area as MT neurons to simulate their RFs, as well as other data analysis and figure creation.
- Developed an experiment and collected eyetracking data utilising the Eyelink 1000 Plus eyetracker. Utilised Psychtoolbox for stimulus generation and presentation of moving dot fields to study ocular following response.
- Assisted in data collection and analysis two studies, one investigating the use of navigational cues on the HoloLens as a mobility aid in low-vision patients and the other studying perceptual motion priors in individuals with normal versus impaired vision.

Amazon Lab126, Amazon Web Services – Sunnyvale

Specialized HDE Intern - Emerging Optics

05/2025 – 08/2025

- Developed optical simulations using LightTools to analyze reflection characteristics in emerging display technology, identifying key parameters affecting visual comfort.
- Designed and conducted two user studies: (1) real-world usability testing with prototype devices and (2) psychophysical experiments using MATLAB and programmable lighting to establish perceptual thresholds and preferences
- Employed rigorous statistical methodology including non-parametric analyses, correlation studies, and predictive modeling to translate optical measurements into user experience metrics
- Created comprehensive technical documentation including literature reviews, experimental protocols, and data visualization, and communicated technical findings and design implications to stakeholders across product management, human factors, optical engineering, and safety/reliability teams

University of California, Berkeley, Redwood Center for Theoretical Neuroscience

Advisors: Dr. Bruno Olshausen

NIH T35 Integrated Summer Research Program

05/2022 – 08/2022

- Trained a sparse coding algorithm to extract binocular features from stereo images of the natural world and analysed the resultant basis functions

McGill University, Department of Ophthalmology and Vision Science

Advisors: Dr. Robert F. Hess, Dr. Alexander Baldwin

Research Assistant

06/2018 – 08/2021

- Worked on the McGill team for development of digital clinical measurement applications for clinical trials of an amblyopia-correcting video game (Dig Rush) in a collaboration between Novartis, Ubisoft, and McGill University.
- Coded components of interactive browser-based tests for binocular suppression, stereovision, and screen calibration in C# using Unity3D, including scripted dichoptic stimuli and implementation of staircase algorithms.

Research Assistant & Undergraduate Thesis

- Coded and ran psychophysical experiments presented on FOVE eye-tracking virtual-reality headsets using Unity3D software, one aiming to quantify the sensitivity of stereopsis around the visual field and the other measuring vergence movements in response to depth percepts moving on binocular screens.
- Scripted and ran a stereoscopic perception test on MATLAB with Psychtoolbox that leveraged the sensitivity of binocular depth perception to detect monocular retinal abnormalities, such as those symptomatic of early-stage age-related macular degeneration.

RELEVANT EXPERIENCE – CLINICAL

UC Berkeley Optometry Clinics

Optometric Intern

2023 – 2025

- Provided comprehensive optometric health care across primary, urgent care, and specialty clinics, including myopia control, ocular disease, specialty contact lenses, binocular vision and vision therapy, pediatrics, and dry eye clinic.

Clinical Externships

Optometric Intern

2024 – 2025

- Completed clinical externships at US Veteran Affairs and community healthcare centers serving diverse patient populations with emphasis on ocular disease treatment and management, including of glaucoma, age-related macular degeneration, diabetic retinopathy, and low vision services
 - Vancouver VA Medical Center | VA Portland Health Care
 - Fresno VA Medical Center | VA Central California Health Care
 - Marin Community Clinics

TEACHING EXPERIENCE

University of California, Berkeley, Herbert Wertheim School of Optometry and Vision Science

Graduate Teaching Assistant

Course: VS206A/VS206D – Anatomy and Physiology of the Eye /

Fall 2022

Neuroanatomy and Neurophysiology of the Eye and Visual System

Course: VS217/VS219 – Oculomotor Functions and Neurology / Binocular Vision and Space Perception Spring 2023

- Created material for, organized and ran hands-on lab classes for courses in the OD1 curriculum
- Proctored and graded final exam
- Held office hours and review sessions for midterm and final exams

McGill University, Faculty of Science

Undergraduate Teaching Assistant

Course: PHYS 101: Introduction to Physics - Mechanics

Fall 2018

Course: CHEM 212: Introductory Organic Chemistry 1

Fall 2019

Course: BIOL 201: Cell Biology and Metabolism

Winter 2020

- Held exam review sessions, tutored students during weekly drop-in sessions, and monitored and responded to questions on classroom discussion boards.

LEADERSHIP AND COMMUNITY INVOLVEMENT

Professional Student Organization Affiliations

- University of California Optometric Student Association (UCOSA)
- American Optometric Student Association (AOSA)
- American Academy of Optometry (AAO)
- Beta Sigma Kappa International Honor Society

Vision Development Club (VDC)

Vice President

2022 – 2023

- Led the board team to coordinate talks from guest speakers affiliated with national optometric organizations, such as COVD, NORA, and OEP, to promote awareness of the prospects of vision therapy amongst optometry students.

E-Team

E-Team Member

2021 – 2022

- Repaired ophthalmic instruments in the UCBSO clinic examination rooms and supported day-to-day clinic operations

McGill Parks Canada Campus Club*Vice President – External Affairs***2019 – 2021**

- Collaborated on a successful proposal to the Parks Canada Campus Club Challenge to secure a fund for a club-organized outreach trip to Saguenay National Park.
- Planned and coordinated McGill student outdoor excursions, such as cross-country skiing, snowshoeing, nature hikes, and overnight trips, by contacting representatives at the activity sites, as well as coordinating transportation and food costs.

McGill University Student Hospital Volunteering Club (MUSHVC)*Vice President – Volunteer Coordination***2018 – 2021**

- Grew the MUSHVC volunteer team at the Montreal Neurological Institute and Shriners's Children Hospital to over 40 students by improving outreach and coordinating volunteer orientations and training with hospital administration.

McGill Students Chapter of Journalists for Human Rights*Vice President – Finance***2017 – 2019**

- Budgeted and handled financial transactions for club events and fundraiser, as well as assisting with their planning, set-up, and hosting.
- Completed and submitted semesterly club financial audits for the SSMU.