Annabel Wing-Yan Fan

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PhD Candidate with 9 years of psychophysics research experience, specializing in technology-driven innovations in health and science through user-centered design principles. A strong believer in the power of immersive technology to connect all people.

SKILLS

Research: Research design, display gamma calibration, data analysis & visualization, scientific translation & prototyping, trans-disciplinary collaboration, scientific communication to lay and technical audiences (1 first-author publication, 15 conferences).
Technical: Python, Jupyter Notebook, R, RMarkdown, MATLAB, C#, Unity, Git, Docker, Meta Presence Platform.

EDUCATION

Ph.D. Integrative Program in Neuroscience, McGill University	GPA: 4.0/4.0	2021−2026 (Expected Graduation)
M.A. Perception, Cognition & Cognitive Neuroscience, University of Toronto	GPA: 3.85/4.0	2018−2019

RESEARCH EXPERIENCE

McGill University — Montreal, QC
Graduate Researcher, Baldwin Vision Lab — 2021−present

- Researching how age-related changes in spatiotemporal contrast sensitivity impact target detection in visual noise.
- Extending fundamental research for clinical application by investigating how aging vision impacts driving simulator performance in older adults using quantitative and qualitative (questionnaire) methods.
- Developed python code for experiments and conducted data analysis (psychometric function fitting to model signal detection, bootstrapping to estimate confidence intervals, factor analysis and clustering analysis) in Python, Octave, and R.
- Performed gamma correction using a photometer to calibrate the experimental display.

Research Associate, Hess Lab — 2020−2021

- Developed clinical measurement tools using Unity and C# for the treatment of lazy eye, as part of a research collaboration with industry partners; Novartis (pharmaceutical company) and Ubisoft (game development studio).
  - Designed and developed cross-platform software prototypes in C# based on scientific and technical requirements.
  - Collaborated with software engineers to translate prototypes into FDA-compliant digital medical products.
  - Identified and communicated the value of key design features to technical leads to drive organizational resources.
- Optimized development environments for reproducibility using Docker, Jupyter Notebook, and Git.
- **Manuscript submitted for publication to Journal of Vision.**

Unity Developer, Hess Lab — Summer 2018

- Investigated the use of Microsoft's HoloLens Mixed Reality (MR) technology in vision research by developing a psychophysics experiment and two proof-of-concept prototypes using Unity, C#, and Azure Web Services.
- Conducted independent research to deliver recommendations and insights to inform research and purchasing decisions.
- Focused on improving visual ergonomics and creating code libraries for conducting psychophysical experiments in MR.
- Demonstrated initiative and commitment to reproducibility by developing sample projects with thorough documentation to guide future researchers working with the HoloLens.

University of Toronto — Toronto, ON
Graduate Researcher, Visual Cognitive Neuroscience Lab — 2018−2020

- Investigated the influence of visual statistical processing on grasping behaviour using psychophysics.
- Collected and analyzed large, multi-dimensional data sets using 3D motion tracking, electromyography (EMG), multilevel modelling, and support vector machine classification.
- **Published a first-author article in Frontiers Psychology (Impact Factor 3.8; 2022).**

LEADERSHIP & EXTRACURRICULAR ACTIVITIES

McGillXR Chief Executive Officer — 2022−present

- Founder and current CEO of McGillXR (`www.mcgillxr.ca`), an organization that hosts extended reality (XR) events and connects students to local and international XR organizations with support from academic and industry sponsors.
- Developed and taught hands-on workshops on XR development for the Meta Quest 2 using Unity and C#.
- Organizing our first NeuroVR Hackathon for which 15,000 CAD in funding has been secured.

Microsoft Imagine Cup Americas World Finalist — 2022

- Project lead for the VueForAll application, which used Azure Machine Learning and a data analytics approach to improve visual accessibility and player experience in the video game industry.
- Communicated our team's experiences and goals to a general audience in an interview with Xbox's Developer Blog.