Jessica Ip

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Education

Brown University — Providence, RI
Ph.D., Cognitive Science (GPA: 4.0/4.0) — 2021 – 2026
Advisors: Dr. William C. Heindel, Dr. Elena K. Festa

University of British Columbia (UBC) — Vancouver, BC
B.A., Cognitive Systems (Class 1 Standing) — Graduation: 2020
Advisors: Dr. Ronald A. Rensink, Dr. Karon E. MacLean

Publications

1. Seifi, H., Fazlollahi, F., Oppermann, M., Sastrillo, J.A., **Ip, J.**, Agrawal, A., Park, G., Kuchenbecker, K.J., & MacLean, K.E. (2019). Haptipedia: Accelerating Haptic Device Discovery to Support Interaction and Engineering Design. *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*, 1-12.

2. **Ip, J.**, Heindel, W.C., & Festa, E.K. (In prep). EEG Dynamics of Reentrant Binding and Executive Control Demands in Visual Search.

3. **Ip, J.**, Heindel, W.C., & Festa, E.K. (In prep). Theta and Alpha Oscillatory Signatures of Implicit Semantic Audiovisual Integration in Healthy Aging and Mild Cognitive Impairment.

4. **Ip, J.**, Heindel, W.C., & Festa, E.K. (In prep). Spectral Dynamics in Visual Conjunctive Memory Binding.

Talks, Conference Presentations & Workshops

1. **Ip, J.**, Heindel, W.C., & Festa, E.K. (Presenting in 2026). Theta and Alpha EEG Dynamics Reveal Altered Semantic Processing in Aging and MCI [Poster Presentation]. International Neuropsychological Society. Philadelphia, PA.

2. **Ip, J.** (2025). Alpha/Theta Characterization of Semantic Processing Dynamics in Healthy Aging and Mild Cognitive Impairment. Cognitive and Psychological Sciences Social/Cognitive Seminar, Brown University. Providence, Rhode Island.

3. **Ip, J.** (2025). Agentic AI Workflows in AWS HealthOmics: A Multiomics Example. Healthcare and Life Sciences Technical Forum, Amazon Web Services. Seattle, Washington.

4. **Ip, J.**, Heindel, W.C., & Festa, E.K. (2024). Differential Attentional Costs of Encoding Single- vs. Multiple-Feature Objects in Visual Working Memory: An ERP Study [Poster Presentation]. Object Perception, Visual Attention, and Visual Memory Conference. New York City, New York.

5. **Ip, J.**, Heindel, W.C., & Festa, E.K. (2024). Differential EEG Markers of Selective Attention and Feature Binding in Visual Search. [Poster Presentation, VSS 2024]. *Journal of Vision*, *24*(10), 1066. https://doi.org/10.1167/jov.24.10.1066

6. **Ip, J.**, Heindel, W.C., & Festa, E.K. (2023). Age-Related Effects of Audiovisual Semantic Congruency on Living and Nonliving Object Perception [Poster Presentation]. Cognitive Neuroscience Society (CNS) 30th Annual Meeting. San Francisco, California.

7. **Ip, J.**, Chin, N., & Rensink, R. (2021). Correlation Perception in Scatterplots is Invariant to Dot Size. [Poster Presentation, VSS 2021]. *Journal of Vision*, *21*(9), 2171. https://doi.org/10.1167/jov.21.9.2171

8. Seifi, H., **Ip, J.**, Agrawal, A., Kuchenbecker, K. J., & MacLean, K. E. (2019). Toward Expert-Sourcing of a Haptic Device Repository. *CHI Workshop on Crowds and Creativity*, 1-4.

9. Seifi, H., Fazlollahi, F., Oppermann, M., Sastrillo, J. A., **Ip, J.**, Agrawal, A., Tembo, T., Park, G., Kuchenbecker, K. J., & MacLean, K. M. (2019). Haptipedia: A Haptic Device Library to Support Interaction and Engineering Design [Poster Presentation]. DFP Design Showcase. Vancouver, Canada. *Denotes equal contribution.

10. **Ip, J.***, Pertels, Y.*, Chai, W.*, & Thongprasert, S*. (2017). Image Transitions: Visual Search in the Dynamic World [Poster Presentation]. UBC Multidisciplinary Undergraduate Research Conference. Vancouver, Canada.

    *Denotes equal contribution.

Selected Awards & Honors

Sigma Xi, Scientific Research Honor Society   2024
Manning Graduate Fellowship IV, Brown University   2022–2023
Conference Travel Fund, Brown University   2023, 2024
Elsevier/Vision Research Virtual Travel Award, Vision Sciences Society   2021
Undergraduate Student Research Award in Computer Science, NSERC ($4,500)   2019

Research Experience

Department of Cognitive and Psychological Sciences, Brown University   Providence, RI
Ph.D. Student/Candidate   08/2021 – Present

- Designed and conducted human scalp electroencephalography (EEG), eye tracking, and psychophysical experiments to examine neurocognitive correlates of (audio)visual perception and visual memory using PsychToolbox, MATLAB, and E-Prime. Wrote analysis and neural signal preprocessing pipelines for running inferential statistical and computational analyses on high-dimensional time-series EEG (event-related spectral perturbations, spectral parameterization, transient cortical oscillations, and event-related potentials) and behavioral data using MATLAB, R, and Python.

Topics: Cognitive Neuroscience, Sensory Perception, Aging

Visual Cognition Lab, UBC Psychology   Vancouver, BC
Project Leader and Research Assistant with Dr. Ronald A. Rensink   09/2016 – 04/2021

- Investigated the influence of different visual attributes on the perception of correlation in data visualizations using applied psychophysics. Investigated the influence of spatial transformations on performance in feature and conjunctive visual search. Led and managed a team of undergraduate researchers for nine academic terms.

Topics: Information Visualization, Vision Science, Perception, Psychophysics

Max Planck Institute for Intelligent Systems & UBC Computer Science   Vancouver, BC
Research Assistant with Dr. Karon E. MacLean and Dr. Hasti Seifi   04/2018 – 08/2019

- Designed and conducted a user study on a novel haptic device library (Haptipedia), leading to an ACM CHI '19 publication. Co-led a study on crowdsourcing incentives on Haptipedia.

Topics: Human-Computer Interaction, Haptics, Crowdsourcing

Sensory Perception & Interaction Lab, UBC Computer Science   Vancouver, BC
Research Assistant with Dr. Karon E. MacLean and Paul Bucci   01/2018 – 04/2018

- Investigated the display and recognition of emotion in low fidelity robot designs. Simulated simple affective behavior through audio and graphical interfaces created with low-cost and rapid prototyping techniques.

Topics: Robotics, Low-fidelity Prototyping

Teaching Experience

Research Mentor, Brown University   Providence, RI
Undergraduate Students: Takemi Sono-Knowles (2025-Present), Andrew Hudak (2024-Present), Jillian Leahy (2024), Camila Dangot (2024)

Graduate Teaching Assistant, Brown University   Providence, RI
CLPS 0702: Introduction to Clinical Psychology   01/2025 – 05/2025
CLPS 1702: Psychological Assessment   09/2024 – 12/2024
CLPS 1900: Research Methods and Design   01/2024 – 05/2024
CLPS 0010: Mind, Brain and Behavior (Head TA)   09/2023 – 12/2023
CLPS 1420: Cognitive Neuropsychology   01/2023 – 05/2023
CLPS 0010: Mind, Brain and Behavior   09/2022 – 12/2022

Led weekly sections, hosted weekly office hours, graded research papers and presentations, and managed teams of undergraduate and graduate TAs.

Directed Studies Supervisor, UBC   Vancouver, BC

COGS 402: Research in Cognitive Systems   01/2020 – 04/2020

Supervised a senior thesis project in vision science. Mentored and monitored student progress on experimental design, coding, data analysis, and paper writing.

Workshop Instructor, UBC Visual Cognition Lab   Vancouver, BC

Workshop on Psychophysics and Data Analysis Methods   03/2019

Designed and taught four workshop sessions on psychophysics methods.

Undergraduate Teaching Assistant, UBC   Vancouver, BC

COGS 303: Research Methods in Cognitive Systems   09/2018 – 12/2018

Graded weekly written assignments, quizzes, in-class activities, and final research reports while providing academic support for 39 students through email, weekly office hours, and exam review sessions.

Other Work Experience

Amazon Web Services   Seattle, WA

Summer Internship   06/2025 – 08/2025

Wrote and published API documentation and code samples for AWS HealthOmics, a cloud computing platform for large-scale bioinformatics analyses in precision medicine. Tested cloud-based agentic AI workflows for a neuroscientific use case. Presented a live demonstration and proof-of-concept findings at the healthcare and life sciences internal forum (50+ in attendance).

Technology: Amazon S3, EC2, IAM, CloudWatch, Docker, Git, VSCode, agentic AI and LLM prompting (Claude Sonnet 3.7)

Advesa Digital Solutions Inc.   Burnaby, BC

Technical Writer   06/2020 – 06/2021

Wrote REST API and GUI documentation for e-commerce software.
Technology: Confluence, Postman, Swagger, JIRA

UBC Emerging Media Lab   Vancouver, BC

Academic Assistant   11/2017 – 04/2018

Created and facilitated Virtual Reality and Brain-Computer Interface demos and workshops.
Technology: Virtual Reality (HTC ViveTM), Brain-Computer Interface (MuseTM Headband)

Technical Skills

Programming Languages: MATLAB (proficient), R (proficient), Python (proficient), JavaScript, HTML/CSS, Java, C/C++

Research Software/Toolkits: PsychToolbox, EEGLAB, E-Prime, Git, LaTeX, MAXQDA

Quantitative Research Methodology: Scalp Electroencephalography (EEG), Event-Related Potential (ERP) Analysis, Event-Related Spectral Perturbation (ERSP) Analysis, Spectral Parameterization, Psychophysics, Eye Tracking, Visuomotor Tracking and Analysis

Qualitative Research Methodology: User Interviews, Usability Testing, User Interface Wireframing and Prototyping, Thematic Analysis

Service

CoPsy EEG Working Group, Co-Organizer   *Ongoing*
Computational Cognitive Neuroscience Journal Club, Organizer   2024
CLPS IT/Communications Committee, Twitter Manager   10/2022 – 07/2023