Cherrie Chang

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Education

2020-2024

B.A. Cognitive Science, Computer Science, Vassar College

Minor in Analytic Philosophy

GPA: 3.88

Experience

2025-

Research Software Engineer, Advanced Analytics & AI for Communication Science Lab

MGH Institute of Health Professions | PI: Dr. Joshua Hartshorne

- Develop and maintain Pushkin, an open-source platform providing end-to-end lab site deployment infrastructure for researchers to run online experiments at scale without DevOps expertise
- Design infrastructure supporting research on human-AI interaction by integrating AI tools into Pushkin's experiment design and data analysis workflows; develop Open Cognition Lab — a classroom-based application for running multi-agent collaboration studies
- Migrated Pushkin's deprecated deployment infrastructure to use modern AWS infrastructure; added scalable infrastructure to support data collection from multiple concurrent studies
- Rebuilt Games With Words lab website with unified codebase architecture and deployed with Pushkin, improving reliability and simplifying experiment management

2024-2025

Research Software Engineer, jsPsych

Vassar College | PI: Dr. Joshua de Leeuw

- Conducted statistical evaluation of convolutional neural network for webcam eyetracking, analyzed model performance across calibration settings and participant conditions; co-author research paper documenting model capabilities and limitations
- Developed jsPsych into an open science ecosystem by building developer tools that lower barriers to contribution, including command-line tooling that scaffolds new experiments and plugins, automatically generates documentation, and tracks citations to ensure contributor recognition
- Designed and implemented a standard abstraction for experiment timelines, enabling researchers to create reusable, modular experiment components; co-author methodology chapter and research paper on this abstraction to facilitate experiment replicability across labs

- Translated researcher needs into practical software features through extensive user research (60+ interviews via NSF I-Corps), understanding experimental workflows, data collection challenges, and usability barriers to guide development priorities
- Improved software reliability through automated testing, continuous integration workflows, and security enhancements, ensuring stable data collection

2023-2024 **Undergraduate Researcher, Cognitive Science Department**

Vassar College | Advisor: Dr. Joshua de Leeuw

- Investigated whether LLM embedding spaces can represent complex semantic relationships between paragraphs, such as argument-counterarguments and argument-evidence, beyond simple similarity, analyzing the congruence between linguistic representational structures in LLMs and humans (CogSci 2024)
- Designed and implemented computational study combining principal component analysis for linear subspace detection and neural network training for nonlinear subspace learning; evaluated across three embedding models (OpenAI ada-002, ada-003-small, Nomic Embed) and six datasets
- Engineered custom data processing pipeline for each of six heterogeneous datasets (84,000+ pairs), including designing XML parsers for structured debate files, implementing quality-based filtering, restructuring unstructured text as formal arguments, and curating a novel dataset from diverse, independent sources
- Discovered that while linear transformations failed to capture argumentative relationships, simple three-layer neural networks achieved 20-40% accuracy learning nonlinear transformations that generalized across novel datasets, demonstrating genuine semantic structure encoding in embedding spaces

Publications

***Chang, C.**, *Inojosa, V., Paudel, S., Teabo, A. & de Leeuw, J. (2025) Online data collection with jsPsych. Reference Module in Social Sciences.

Chang, C. & de Leeuw, J. (2024). Searching for Argument-Counterargument Relationships in Vector Embedding Spaces. In Proceedings of the Annual Meeting of the Cognitive Science Society (Vol. 46).

Chang, C. & de Leeuw, J. *(in prep)*. jsPsych-timelines: An intuitive abstraction of online experiments guided by software development principles.

*de Leeuw, J., ***Chang. C.**, *Mikulski, C., , Eswaramoorthy, O., Mannix, J. & Teabo, A. *(in prep)* Convolutional Neutral Network for Web-Based Eyetracking.

Honors & Rewards

Department Honors in Cognitive Science	2024
Sigma Xi	2024
Phi Beta Kappa	2024
Psi Chi	2024
Hong Kong Scholarship for Excellence Scheme (HKSES)	2020

Skills

Programming: Python, R, JavaScript (CSS, HTML), SQL, Java, C#, C
Software Technologies: Tensorflow (Keras), R Studio, Git, Node.js, React, Unity, .NET
Design: Figma, Illustrator, Blender, InDesign, Animate, Premiere, FCPX, Adobe Xd

Teaching

2024 Teaching Assistant, Vassar College COGS 219 Research Methods

- Developed R analysis pipelines for class replication project processing EEG data, implementing signal processing, artifact rejection and statistical modeling workflows
- Mentored students on experimental design, jsPsych coding, scientific writing, and statistical analysis for class research project, guiding teams through full research cycle from hypothesis development to manuscript preparation

2023 Teaching Assistant, Vassar College CMPU 203 Software Design

- Mentored student teams developing Android applications from initial design through deployment, emphasizing software architecture patterns, version control workflows, and collaborative development practices essential for team-based software engineering