ALEX NGUYEN

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EDUCATION

Princeton Neuroscience Institute, Princeton, NJ *09/2020 - Present*
PhD in Neuroscience

Minerva Schools at KGI, San Francisco, CA *09/2015 - 05/2019*
B.Sc. in Natural Sciences and Computational Sciences
Concentrating in Biophysics and Computational Statistics

RESEARCH EXPERIENCE

Princeton Neuroscience Institute, Princeton University *09/2019 - 08/2020*
Research Specialist
• Build neural network models of representational changes during statistical learning
• Use Go and the Emergent framework to build models and Python to analyze results

University of British Columbia Department of Chemistry *09/2018 - 09/2019*
Research Assistant
• Develop algorithms to efficiently solve quantum chemistry problems
• Solve Schrodinger's Equations efficiently using a modified Green's function method

Stanford University School of Engineering *06/2018 - 08/2018*
Research Intern
• Build a Node.js app that quantifies team dynamics and improves team effectiveness
• Implement natural language processing and sentiment analysis techniques in Python scikit-learn to measure team dynamics and identify effective interventions

Audible, Inc. *08/2016 - 08/2017*
Research Intern
• Develop a listening comprehension program using psychological principles from the science of learning
• Utilize quantitative research methods and implement a controlled experiment to test the effectiveness of the program

Stanford Artificial Intelligence Laboratory *05/2016 - 08/2016*
Research Assistant
• Implement a genetic algorithm in Python to reconstruct subjects' mental template of visual scenes

TEACHING EXPERIENCE

Computational Neuroscience, Princeton University *01/2022 - 05/2022*
Graduate Assistant Instructor

Mathematical Tools for Neuroscience, Princeton University *09/2021 - 12/2021*
Graduate Assistant Instructor

LEADERSHIP AND AWARDS

- Canada Governor General's Academic Medal (2015)
- Britannia Gold Scholarship for Highest Achieving Scholar (2015)
- Ryerson University Undergraduate Summer Research Grant (2016)
- Canada National Science and Engineering Research Council Undergraduate Summer Research Awards (2017, 2018)
- Princeton Neuroscience Institute Recruitment Week Student Organizer (2022)
- Manhattan Area Memory Meeting Trainee Organizer (2022)

PUBLICATIONS

- **Alex Nguyen**, Gautam Reddy (2024). "Differential learning kinetics govern the transition from memorization to generalization during in-context learning." arXiv preprint *arXiv:2412.00104*.
- **Alex Nguyen**, David J. Schwab, Vudtiwat Ngampruetikorn (2024). "Generalization vs. Specialization under Concept Shift." Scientific Methods for Understanding Deep Learning. Workshop at the Conference on Neural Information Processing Systems (NeurIPS).
- Victoria J.H. Ritvo, **Alex Nguyen**, Nicholas Turk-Browne, Kenneth A. Norman (2023). "Differentiation and Integration of Competing Memories: A Neural Network Model." eLife (Accepted as a Reviewed Preprint).
- Kailong Peng, Jeff Wammes, **Alex Nguyen**, Coraline R. Iordan, Kenneth A. Norman, Nicholas Turk-Browne (2024). Inducing representational change in the hippocampus through real-time neurofeedback. Philosophical Transactions B.
- Paul Scotti, Atmatdeep Banerjee, Jimmie Goode, Stepan Shabalin, **Alex Nguyen**, Ethan Cohen, Tanishq Mathew Abraham. (2023). Reconstructing the Mind's Eye: fMRI-to-Image with Contrastive Learning and Diffusion Priors. Advances in Neural Information Processing Systems (2023).
- **Alex Nguyen**, Kiel Howe (2019). "Learning Renormalization with a Convolutional Neural Network." Machine Learning and the Physical Sciences. Workshop at the 33rd Conference on Neural Information Processing Systems (NeurIPS).

CONFERENCE PRESENTATIONS

- **Alex Nguyen**, David J. Schwab, Vudtiwat Ngampruetikorn (2024). "Generalization vs. Specialization under Concept Shift." Poster presented at Scientific Methods for Understanding Deep Learning, a Workshop at the Conference on Neural Information Processing Systems (NeurIPS).
- Victoria J.H. Ritvo, **Alex Nguyen**, Nicholas Turk-Browne, Kenneth A. Norman (2022). "Differentiation and Integration of Competing Memories: A Neural Network Model." Poster presented at the 18th Annual Context and Episodic Memory Symposium, Philadelphia, PA.