# Linxing (Preston) Jiang

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## EDUCATION

Ph.D.    Computer Science, University of Washington, 2025 (expected)

M.S.    Computer Science, University of Washington, 2020

B.S.    Computer Science *cum laude*, University of Washington, 2018

## APPOINTMENTS

2019–    University of Washington
Graduate Research Assistant, Computer Science & Engineering, Center for
Neurotechnology
Advisor: Prof. Rajesh P. N. Rao
*Topic: Predictive coding theories of cortical function*

2018–19    Duke University
Research Associate, Center for Cognitive Neuroscience, Duke Institute for Brain
Sciences
Advisor: Prof. Kathryn Dickerson, Prof. R. Alison Adcock
*Topic: fMRI data analysis for cognitive neuroscience*

2017–18    University of Washington
Undergraduate Research Assistant, Computer Science & Engineering
Advisor: Prof. Andrea Stocco, Prof. Rajesh P. N. Rao
*Topic: Multi-person brain-computer and brain-to-brain interface design*

## PUBLICATIONS

### Journal Articles

2022    Bryan, M. J., **Jiang, L. P.**, and Rao, R. P. N. "Neural Co-Processors for Restoring Brain
Function: Results from a Cortical Model of Grasping." (submitted)

2022    **Jiang, L. P.** and Rao, R. P. N. "Dynamic Predictive Coding: A New Model of
Hierarchical Sequence Learning and Prediction in the Cortex." (submitted)

2022    **Jiang, L. P.** and Rao, R. P. N. "Predictive Coding Theories of Cortical Function."
*Oxford Research Encyclopedia of Neuroscience.* (to appear)

2019    **Jiang, L. P.**, Stocco, A., Losey, D. M., Abernethy, J. A., Prat, C. S., and Rao, R. P. N.
"BrainNet: A Multi-Person Brain-to-Brain Interface for Direct Collaboration Between
Brains." *Scientific reports.*

### Conferences

2022 Mirbagheri, S., **Jiang, L. P.**, Fisher, A., Rao. R. P. N. and Steinmetz, N. A., "Stimulus-specific Omission Responses in Mouse Primary Visual Cortex." *Society for Neuroscience (SfN).* San Diego, California, USA. [Poster presentation]

2022 Rao, R. P. N., **Jiang, L. P.**, Gklezakos, D. C., Fisher, A. and Sathish, V., "Dynamic and Active Predictive Coding: New Approaches to Understand Cortical Functions." *Society for Neuroscience (SfN).* San Diego, California, USA. [Poster presentation]

2022 **Jiang, L. P.** and Rao, R. P. N., "Learning Hierarchical Temporal Representations via Dynamic Predictive Coding." *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) NeuroVision Workshop.* Virtual Attendance due to COVID-19. [**Best Poster Award**]

2021 **Jiang, L. P.**, Gklezakos, D. C., and Rao, R. P. N., "Dynamic Predictive Coding of Natural Movies Produces Visual Cortical Space-Time Receptive Fields." *Computational and Systems Neuroscience (Cosyne).* Virtual Meeting due to COVID-19. [Poster presentation]

2020 Sun, S., **Jiang, L. P.**, Peterson, S.M., Herron, J., Weaver, K., Ko, A., Ojemann, J., and Rao, R. P. N., "Unsupervised Sleep and Wake State Identification in Long-Term Electrocorticography Recordings." *42nd Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC).* Virtual Meeting due to COVID-19. [Oral presentation]

2019 Ketola, M., **Jiang, L. P.**, and Stocco, A. "Comparing Alternative Computational Models of the Stroop Task Using Effective Connectivity Analysis of fMRI Data." *Proceedings of the 41st Annual Conference of the Cognitive Science Society.* Montréal, Québec, Canada. [Oral presentation]

2018 **Jiang, L. P.**, Stocco, A., Losey, D. M., Abernethy, J. A., Prat, C. S., and Rao, R. P. N. "BrainNet: A Multi-person Brain-to-brain Interface for Direct Collaboration Between Brains." *Brain Informatics.* Arlington, Texas, USA. [**Oral presentation**]

### Preprints

2021 **Jiang, L. P.**, Gklezakos, D. C., and Rao, R. P. N., "Dynamic Predictive Coding with Hypernetworks." *bioRxiv.*

2021 **Jiang, L. P.**, Iglesia, L., "Improved Training of Sparse Coding Variational Autoencoder via Weight Normalization." *arXiv.*

## INVITED TALKS

2022 "Dynamic Predictive Coding: A New Model of Hierarchical Sequence Learning and Prediction in the Cortex" The Swartz Foundation Annual Meeting, Cold Spring Harbor Lab.

2022 "Dynamic Predictive Coding: A New Model of Hierarchical Sequence Learning and Prediction in the Cortex" Pearson Lab, Center for Cognitive Neuroscience, Duke University.

2022 "Learning Hierarchical Temporal Representations Through Dynamic Predictive Coding" Neural-AI Reading Group, Mila.

| 2021 | "Predictive Coding Theories: 20 Years Later." NEUSCI 403: Computational Models of Neuroscience, University of Washington. |
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| 2021 | "Brain-to-Brain Interfaces and BrainNet." PSYCH 472 A: Augmented Humanity, University of Washington. |
| 2020 | "Deep Predictive Coding of Natural Images" Brown Bag Research Seminar, Department of Psychology, University of Washington. |

## RECOGNITION

| 2020-21 | Microsoft Endowed Fellowship, Paul G. Allen School of Computer Science & Engineering, University of Washington |
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| 2018 | Outstanding Computer Science Senior Award, Paul G. Allen School of Computer Science & Engineering, University of Washington |
| 2018 | Outstanding Undergraduate Researcher (honorable mention), Computing Research Association |
| 2017-18 | Levinson Emerging Scholar Award, University of Washington |
| 2017-18 | James A. Hewitt, Jr. Endowed Scholarship, Paul G. Allen School of Computer Science & Engineering, University of Washington |
| 2017-18 | Undergraduate Fellow in Neuroengineering, Washington Research Foundation |

## TEACHING AND MENTORSHIP

### Mentoring

Jasper Balinas (2022): low-dimensional manifolds in naturalistic electrocorticography (ECoG) data. *First employment:* Junior, UW Computer Science

Mozes Jacobs (B.S. 2022): predictive coding for learning hierarchical temporal representations. *First employment:* Research Fellow, Allen Institute for Brain Science

Luciano de la Iglesia (B.S., M.S. 2021): neural co-processors for bi-directional brain-computer interfaces. *First employment:* Data Scientist, Microsoft & Head of Engineering, OpenTug

### Teaching Assistant

CSE 481 A: Neural Engineering, Spring 2022, University of Washington

CSE 160: Data Programming, Winter 2020 & Winter 2018, University of Washington

CSE 332: Data Structures and Parallelism, Autumn 2019 & Autumn 2017, University of Washington

## SERVICE

Reviewer: Cognitive Science Society (CogSci) 2023

Student member: Ph.D. Application Reading Committee, Paul G. Allen School of Computer Science & Engineering, University of Washington. 2021-2023

Reviewer: Society for Mathematical Psychology (MathPsych), 2019

Reviewer: International Conference on Cognitive Modelling (ICCM), 2019

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