

Qihong Lu

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Education

- 2017-present **Ph.D., Psychology**, Princeton University.
Advisors: Ken Norman, Uri Hasson
- 2019 **M.A., Psychology**, Princeton University.
- 2013-2017 **B.S., Psychology & Mathematics**, University of Wisconsin-Madison.
Graduated with Comprehensive Honors; Certificate in Computer Science

Research Experience

- 2017-present **Princeton Computational Memory Lab**, Princeton University.
P.I.: Kenneth A. Norman
- 2017-present **Hasson Lab**, Princeton University.
P.I.: Uri Hasson
- 2014-2017 **Knowledge and Concepts Lab**, UW-Madison.
P.I.: Timothy T. Rogers
- Summer 2015 & 2016 **The Parallel Distributed Processing Lab**, Stanford University.
P.I.: James L. McClelland
- 2013-2015 **Language and Cognitive Neuroscience Lab**, UW-Madison.
P.I.: Maryellen C. MacDonald & Mark S. Seidenberg

Papers & Preprints

- Chen, C., Lu, Q., Beukers, A., Baldassano, C., Norman, K. A. (2021). Learning to perform role-filler binding with schematic knowledge. *PeerJ*, 9, e11046.
- Lu, Q., Hasson, U., Norman, K.A., (2020). Learning to use episodic memory for event prediction. *bioRxiv*.
- Kumar, M., Anderson, M.J., Antony, J.W., Baldassano C., Brooks, P.P., Cai, M.B., Chen, P.H.C., Ellis, C.T., Henselman-Petrusek, G., Huberdeau, D., Hutchinson, J.B., Li, P.Y., Lu, Q., Manning, J.R., Mennen, A.C., Nastase, S.A., Hugo, R., Schapiro, A.C., Schuck, N.W., Shvartsman, M., Sundaram, N., Suo, D., Turek, J.S., Vo, V.A., Wallace, G., Wang, Y., Zhang, H., Zhu, X., Capota, M., Cohen, J.D., Hasson, U., Li, K., Ramadge, P.J., Turk-Browne, N.B., Willke, T.L. Norman, K.A. (2020). BrainIAK: The Brain Imaging Analysis Kit. OSF preprints.
- Kumar, M., Ellis, C. T., Lu, Q., Zhang, H., Capotă, M., Willke, T. L., Ramadge, P. J., Turk-Browne, N. B., Norman, K. A. (2020). BrainIAK tutorials: User-friendly learning materials for advanced fMRI analysis. *PLoS Computational Biology*, 16(1), e1007549.
- Rogers, T. T., Cox, C., Lu, Q., Shimotake, A., Kikuch, T., Kunieda, T., Miyamoto, S., Takahashi, R., Ikeda, A., Matsumoto, R., Lambon Ralph, M. A. (2019). Evidence for a deep, distributed and dynamic semantic code in human ventral anterior temporal cortex. *bioRxiv*.
- Lu, Q., Chen, P. H., Pillow, J. W., Ramadge, P. J., Norman, K. A., & Hasson, U. (2018). Shared Representational Geometry Across Neural Networks. Workshop on Integration of Deep Learning Theories, 32nd Conference on Neural Information Processing Systems Montréal, Canada.

McClelland, J. L., Mickey, K., Hansen, S., Yuan, X., & Lu, Q. (2016). A Parallel-Distributed Processing Approach to Mathematical Cognition. Manuscript, Stanford University.

■ Talks

- Lu, Q., Hasson, U., & Norman, K. A. (2021). When to recall and encode episodic memory. DeepMind.
- Lu, Q., Hasson, U., & Norman, K. A. (2021). When to recall and encode episodic memory. Oxford Neurotheory Lab, University of Oxford. PI: Andrew Saxe.
- Chen, C., Lu, Q., Beukers, A., Baldassano, C., Norman, K. A. (2021). Learning to perform role-filler binding with schematic knowledge. Oxford Neurotheory Lab, University of Oxford. PI: Andrew Saxe.
- Lu, Q., Hasson, U., & Norman, K. A. (2021). Modeling when episodic encoding should take place to support event prediction. Invited Symposium How Prior Knowledge Shapes Encoding of New Memories, Cognitive Neuroscience Society Annual Meeting (CNS).
- Lu, Q., Hasson, U., & Norman, K. A. (2020). Learning to use episodic memory for event prediction. Context and Episodic Memory Symposium (CEMS).
- Lu, Q., Hasson, U., & Norman, K. A. (2020). Learning when to recall. Neuromatch.

■ Conference Posters

- Lu, Q., Fan, Z. Y., Hasson, U., Norman, K. A. (2019) Optimal Timing for Episodic Retrieval and Encoding for Event Understanding. The Conference on Cognitive Computational Neuroscience.
- Lu, Q., Fan, Z. Y., Hasson, U., Norman, K. A. (2019) Patience is a virtue: A normative account of why waiting to encode and retrieve memories benefits event understanding. Poster presented at the Context and Episodic Memory Symposium.
- Kumar, M., Ellis, C.T., Lu, Q., Zhang, H., Capotă, M., Willke, T.L., Ramadge, P.J., Turk-Browne, N.B., & Norman, K.A. (2019). BrainIAK tutorials: user-friendly learning materials for advanced fMRI analysis. Poster presented at The Organization for Human Brain Mapping Annual Meeting.
- Lu, Q., Chen, P. H., Pillow, J. W., Ramadge, P. J., Norman, K. A., & Hasson, U. (2018). Shared Representational Geometry Across Neural Networks. Poster presented at the workshop on Integration of Deep Learning Theories, 32nd Conference on Neural Information Processing Systems.
- Kumar, M., Ellis, C. T., Lu, Q., Zhang, H., Ramadge P. J., Norman, K. A., & Turk-Browne N. B. (2018). BrainIAK education: user-friendly tutorials for advanced, computationally-intensive fMRI analysis. Poster presented at the 48th Annual Meeting of the Society for Neuroscience.
- Lu, Q., Hasson, U., & Norman, K. A. (2018). Modeling hippocampal-cortical dynamics during event processing. The Conference on Cognitive Computational Neuroscience.
- Yu, J. Lu, Q., Hasson, U., Norman, K. A., & Pillow, J. W. (2018). Performance optimization is insufficient for building accurate models for neural representation. The Conference on Cognitive Computational Neuroscience.
- Chen, C., Lu, Q., Beukers, A. Baldassano, C., & Norman, K.A. (2018). Generalized schema learning by neural networks. The Conference on Cognitive Computational Neuroscience.
- Lu, Q., Ramadge, P., Norman, K. A. & Hasson, U. (2018). Measuring representational similarity across neural networks. Poster to be presented at the 40th Annual Meeting of the Cognitive Science Society.
- Lu, Q., & Rogers, T. T. (2016). An interactive model accounts for both ultra-rapid superordinate classification and basic-level advantage in object recognition. Poster presented at the 38th Annual Meeting of the Cognitive Science Society.
- Lu, Q., & McClelland, J. L. (2016). Teaching a neural network to count: reinforcement learning with “social scaffolding”. Poster presented at the 15th Neural Computation and Psychology Workshop.
- Cox, C. R., Lu, Q., & Rogers, T. T. (2015). Iterative Lasso: An even-handed approach to whole brain multivariate pattern analysis. Poster presented at the 22nd Cognitive Neuroscience Society annual conference.

Teaching

- Aug 2021 **TA**, Deep Learning.
Neuromatch Academy
- Spring 2021, **TA**, ELE|NEU|PSY 480 fMRI Decoding: Reading Minds Using Brain Scans.
Fall 2018 Prof: Ken Norman & Peter Ramadge; Princeton
- Spring 2020, **TA**, NEU 350 Laboratory in Principles of Neuroscience (2-week fMRI lab).
Spring 2018 Prof: Alan Gelperin & Anthony Ambrosini; Princeton
- Spring 2019 **TA**, NEU|PSY 330 Computational Modeling of Psychological Function.
Prof: Jon Cohen; Princeton
- Nov 2019, **Guest lecture**, Functional Alignment for fMRI data.
Jan 2019 BrainIAK workshop at Princeton
- Aug 2018 **Guest lecture**, Intro to Multivariate Pattern Analysis.
BrainIAK workshop at Princeton

Research Mentoring

- 2020-2021 Carson Wardell, Princeton. Learning to imagine: Using Memory-Augmented Neural Networks to Model Cortical-Hippocampal Interaction During Mental Simulation.
- 2018-2019 Kathy Fan, Senior Thesis, Princeton. Learning When to Encode and Retrieve Episodic Memories with Memory-Augmented Neural Networks.
- Summer 2018 Noam Miller, Summer research, Princeton. Leabra7: A Python Software for Modeling Hippocampal-Cortical Interactions in Learning.
- 2017-2018 Catherine Chen, Senior Thesis, Princeton. Learning the Schematic Structure of a World: Contextual Understanding of Stochastically Generated Stories in Neural Networks.

Review

- Journal ReScience
- Conference Conference on Cognitive Computational Neuroscience, Conference on the Mathematical Theory of Deep Neural Networks

Service

- 2018-present **Organizer**, The Parallel Distributed Processing (PDP) meeting, Princeton.
- 2018-present **Code review**, Brain Imaging Analysis Kit, PNI-Intel collaboration.
- 2020-2021 **Member**, Psychology Graduate Student Committee.
- 2020 **Co-organizer**, Conference on the Mathematical Theory of Deep Neural Networks.
- 2014-2017 **Student representative**, Faculty Honors Committee, UW-Madison.
- 2013-2014 **Tutor for Calculus I/II**, Greater University Tutoring Service, UW-Madison.

Technical Skills

Python (pytorch, keras), Git, bash script, Matlab, R, \LaTeX

Open Source Contribution

python BrainIAK (Brain Imaging Analysis Kit), PsyNeuLink

Honors & Awards

- 2018 **Charles W. Lummis Scholarship**, Princeton.
- 2017 **College of Letters & Science Dean's Prize**, UW-Madison.
- 2017 **Undergraduate Academic Achievement Award**, UW-Madison.
- 2017 **Outstanding Undergraduate Research Scholar Award**, UW-Madison.
- 2016 **David H. Durra Scholarship**, UW-Madison.
- 2016 **Undergraduate Travel Awards**, UW-Madison.
- 2015 **Phi Beta Kappa as a junior**, UW-Madison.
- 2015 **Hilldale Undergraduate Research Fellowship**, UW-Madison.
- 2015 **Bromley Research Conference Travel Grant**, UW-Madison.
- 2015 **CSLI Summer Research Internship**, Stanford.
- 2014, 2015 **Undergraduate Research Scholar Award**, UW-Madison.
- 2014 **International Undergraduate Writing Contest 3rd Place**, UW-Madison.
- 2014 **Margaret E. and Allard Smith Scholarship**, UW-Madison.
- 2014 **Welton Summer Sophomore Research Grant**, UW-Madison.