

Ji-An Li

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Research Interests	Computational Neuroscience, Cognitive Neuroscience	
Education	University of California, San Diego	California, USA
	Doctoral Study in Neurosciences	2020 – Present
	M.S. in Neurosciences	2020 – 2024
	Advisor: Marcelo Mattar , Marcus Benna	
	University of Science and Technology of China	Anhui, China
	M.S. in Applied Statistics	2016 – 2019
	Advisor: Xiaochu Zhang	
	B.S. in Biological Science	2012 – 2016
	Advisor: Xiaochu Zhang	
	Shitsan Pai Talent Program in Life Sciences (Honor)	
Funding & Honors	B.E. in Computer Science and Technology (Dual)	2012 - 2016
	Advisor: Shangfei Wang	
	Innovative Research Grants Award (Kavli Institute, UCSD)	2022-2023
	Interpretability Hackathon 3.0, First Place	2023
	Outstanding Research Paper Award (USTC)	2020
	Graduate Scholarship, Grade 1 (USTC)	2018
	Suzhou Industrial Park Scholarship (USTC)	2017
	Outstanding Undergraduate Thesis (USTC)	2016
	Guo Moruo Scholarship (USTC, Highest Honor)	2015
	National Scholarship (Chinese Ministry of Education)	2014
	Outstanding Student Scholarship, Gold Medal (USTC)	2013
	Outstanding Freshman Scholarship (USTC)	2012
	China High School Biology Olympiad, Nationwide, Silver Medal	2011
	China High School Biology Olympiad, Anhui Province, First Prize	2011
	National Olympiad in Informatics, Anhui Province, First Prize	2010
Publications	L Ji-An* , C Zhou* , MK Benna[†] , MG Mattar[†] . Linking In-context Learning in Transformers to Human Episodic Memory. <i>NeurIPS</i> . 2024	
	L Ji-An , MK Benna . Deep Learning without Weight Symmetry. <i>arXiv</i> . 2024	
	L Ji-An , MK Benna , MG Mattar . Automatic Discovery of Cognitive Strategies with Tiny Recurrent Neural Networks. <i>bioRxiv</i> . 2023	
	L Ji-An , F Stefanini , MK Benna , S Fusi . Face familiarity detection with complex synapses. <i>iScience</i> . 2023	
	M Molano-Mazón , J Barbosa , J Pastor-Ciurana , M Fradera , RY Zhang , J Forest , J Pozo , L Ji-An , CJ Cueva , J Rocha , D Narain , GR Yang . NeuroGym: An open resource for developing and sharing neuroscience tasks. <i>PsyArXiv, aqc9n</i> . 2022	
	JA Li , D Dong , Z Wei , Y Liu , Y Pan , F Nori , X Zhang . Quantum Reinforcement Learning during Human Decision Making. <i>Nature Human Behaviour</i> . 2020	
	Y Cheng , J Bu , N Li , JA Li , H Gou , S Sun , C Liu , Z Jin , C He , C Fan , C Liu , X Zhang . Dysfunctional resting-state EEG microstate correlated with the severity of cigarette exposure in nicotine addiction. <i>Science China Information Sciences</i> . 2020	

S Minni*, L Ji-An*, T Moskovitz, G Lindsay, K Miller, M Dipoppa, GR Yang. Understanding the Functional and Structural Differences across Excitatory and Inhibitory Neurons. *bioRxiv*, 680439. 2019

R Zha, J Bu, Z Wei, L Han, P Zhang, J Ren, JA Li, Y Wang, L Yang, S Vollstädt-Klein, X Zhang. Transforming brain signals related to value evaluation and self-control into behavioral choices. *Human brain mapping*. 2019

* = equal contributions

Conference papers

J Zida*, L Ji-An*, MG Mattar. Understanding atypical decision making behavior with recurrent neural networks. **Contributed Talk**. *Cosyne 2024*

HD Xiong*, L Ji-An*, MG Mattar, RC Wilson. Distilling decision-making dynamics with low-dimensional architectures. Poster. *Cosyne 2024*

L Ji-An, MK Benna. Biologically plausible credit assignment without weight symmetry. Poster. *Cosyne 2024*

HD Xiong*, L Ji-An*, MG Mattar, RC Wilson. Distilling human decision-making dynamics: a comparative analysis of low-dimensional architectures. Poster. *NeurIPS Workshop AI4Science 2023*

HD Xiong*, L Ji-An*, MG Mattar, R Wilson. Neural network modeling reveals diverse human exploration behaviors via state space analysis. **Contributed talk**. *Cognitive Computational Neuroscience 2023*

L Ji-An, MG Mattar. What do meta-reinforcement learning networks learn in two-stage decision-making? Poster. *Cosyne 2022*

GR Yang, J Pastor-Ciurana, M Fradera, RY Zhang, J Forest, J Pozo, J Barbosa, L Ji-An, CJ Cueva, A Compte, J Rocha, M Molano-Mazon. Neurogym: An open resource to developing and sharing neuroscience tasks. Poster. *Cosyne 2021*

S Minni*, L Ji-An*, T Moskovitz, G Lindsay, K Miller, M Dipoppa, GR Yang. Understanding the functional and structural differences across excitatory and inhibitory neurons. Poster. *Cosyne 2020*

JA Li, F Stefanini, MK Benna, S Fusi. A Face Familiarity Detection System with Complex Synapses. Poster. *Cosyne 2019*

JA Li, Z Wei, X Zhang. Behavioral and neural evidence for quantum reinforcement learning during decision making. Poster. *Society for Neuroscience 2018*

JA Li, GR Yang, XJ Wang. Neural Mechanisms of Recurrent Neural Networks with Interneurons and Dendrites Performing Context-dependent Decision Making. Poster. *Society for Neuroscience 2018*

* = equal contributions

Submitted papers

L Ji-An, MK Benna, MG Mattar. Automatic Discovery of Cognitive Strategies with Tiny Recurrent Neural Networks. *Nature* (under revision)

Research experience

Graduate student researcher. Department of Neurosciences, UC San Diego
 Advisor: Marcelo Mattar, Marcus Benna 2020 – Present

Undergraduate & graduate student researcher. School of Life Sciences, USTC
 Advisor: Xiaochu Zhang 2015 – 2020

Student intern. Zuckerman Institute, Columbia University
 Advisor: Stefano Fusi 2018 – 2020

Student intern. Center for Neural Science, New York University
 Advisor: Xiao-Jing Wang 2017

Talks

Computational Machinery of Cognition, TU Dresden 2024

Contributed talk, Cosyne 2024

AI for Brain Science, Tianqiao and Chrissy Chen Institute 2023

Neurodinner, Neurosciences Graduate Program, UCSD 2023

KIBM Symposium on Innovative Research, UCSD 2023

	Computational Psychiatry Seminar, Chinese Computational Psychiatry Network 2021 Brain Science Institute, RIKEN, Japan	2018
Research Mentorship	Ruicheng Li, master student at UCSD, in the group of Marcelo Mattar Huixing Gou, graduate student at USTC, in the group of Xiaochu Zhang	2022 2020
Reviewer	eLife, Science Advances, IEEE/CAA Journal of Automatica Sinica, IEEE Transactions on Cybernetics, IEEE Transactions on Cognitive and Developmental Systems, Imaging Neuroscience, Open Mind, Frontiers in Human Neuroscience, Scientific Reports, Frontiers in Psychiatry, International Conference on Learning Representations, Conference on Cognitive Computational Neuroscience	
Teaching	Instructor, NEU 200C Cognitive Neuroscience, UCSD Teaching assistant, Regression Analysis, USTC <i>Excellent Teaching Assistant Honor</i>	2023 2018
Academic Activities	Co-organizer, Neurotheory Journal Club Student, Analytical Connectionism Summer School Volunteer, Neuromatch Academy Student, Computational & Cognitive Neuroscience Summer School, CSHA Student, Neuromatch Academy Translator, <i>A Concise Handbook of TensorFlow</i> , supported by Google Developer Relations Team Student, Japanese and Asian Youth Science Exchange Project Intern student, Institute of Biophysics (Beijing), CAS	2024 2024 2022-2023 2021 2020 2018 2015 2013
Leadership	Chair, Computational Neuroscience Committee, UCSD Vice President, Nature Protection Association, USTC	2023 – Present 2015 – 2016
Programming	Python (TensorFlow, PyTorch), MATLAB, R, C++, Bash, SQL, AFNI	