Haoliang Wang

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Education

2019- *PhD*, Experimental Psychology, UC San Diego
Advisors: Judith Fan

Summer 2022 Neurosymbolic Programming Summer School

2019-2021 *MA*, Experimental Psychology, UC San Diego
Advisors: Judith Fan

2015-2019 *BS*, Computer Science, Xi'an Jiaotong University
Advisor: Pengju Ren
Thesis: Spiking neural network learning algorithms based on temporal modulation.

Selected Academic Honors and Awards

2023 Norman Anderson Graduate Travel and Research Award ($1,255).

2022 Norman Anderson Graduate Travel and Research Award ($1,500).

2018 PengKang Scholarship (top 1% students for academic excellence).

2017 Samsung Scholarship (top 2% students for academic excellence).
The First Prize of Alumni Scholarship of Xi'an Jiaotong University (top 2% student for academic excellence).

2016 Outstanding Students in Xi'an Jiaotong University (top 5% students for academic excellence).
The First Prize of Contemporary Undergraduate Mathematical Contest in Modeling (CUMCM).

Research Interests

Computational Cognitive Science: intuitive physics, theory acquisition, concept learning
Machine Learning: program synthesis, representation learning, neural-symbolic models

Publications

* indicates equal contribution

2023 **Wang*, H.**, Jedoui*, K., Venkatesh*, R., Binder*, F., Tenenbaum, J., Yamins, D., Fan, J., and Smith, K.. Modeling and evaluating how the brain makes physical predictions. *Neuroscience 2023.*

2023

Martinez, J., Binder, F., **Wang, H.**, Haber, N., Fan, J., and Yamins, D.. Measuring and Modeling Physical Intrinsic Motivation. *Proceedings of the 45th Annual Meeting of the Cognitive Science Society.*

2022 **Wang, H.**, Allen, K., Vul, E., and Fan, J.. Generalizing physical prediction by composing forces and objects. *Proceedings of the 44th Annual Meeting of the Cognitive Science Society.*

2022 **Wang, H.**, Yang, J., Tamari, R., and Fan, J.. Communicating understanding of physical dynamics in natural language. *Proceedings of the 44th Annual Meeting of the Cognitive Science Society.*

2022 Brockbank*, E., **Wang*, H.**, Yang, J., Mirchandani, S., Bıyık, E., Sadigh, D., and Fan, J.. How do people incorporate advice from artificial agents when making physical judgments? *Proceedings of the 44th Annual Meeting of the Cognitive Science Society.*

2021 **Wang, H.**, Polikarpova, N., and Fan, J.. Learning part-based abstractions for visual object concepts. *Proceedings of the 43rd Annual Meeting of the Cognitive Science Society.*

2021 **Wang, H.**, Vul, E., Polikarpova, N., and Fan, J.. Theory acquisition as constraint-based program synthesis. *Proceedings of the 43rd Annual Meeting of the Cognitive Science Society.*

2021 McCarthy*, W., Hawkins*, R., **Wang, H.**, Holdaway, C., and Fan, J.. Learning to communicate about shared procedural abstractions. *Proceedings of the 43rd Annual Meeting of the Cognitive Science Society.*

2020 **Wang, H.**, and Fan, J.. Library learning for structured object concepts. *ICML Workshop on Object-Oriented Learning: Perception, Representation, and Reasoning.*

Conference Presentations

2023 Modeling and evaluating how the brain makes physical predictions. Poster presented at *Neuroscience 2023.*

2022 Generalizing physical prediction by composing forces and objects: Poster presented at *44th Annual Meeting of the Cognitive Science Society.*

2022 Communicating understanding of physical dynamics in natural language: Poster presented at *44th Annual Meeting of the Cognitive Science Society.*

2021 Learning part-based abstractions for visual object concepts: Poster presented at *43rd Annual Meeting of the Cognitive Science Society.*

2021 Theory acquisition as constraint-based program synthesis: Poster presented at *43rd Annual Meeting of the Cognitive Science Society.*

2020 Library learning for structured object concepts: Poster presented at *ICML Workshop on Object-Oriented Learning: Perception, Representation, and Reasoning.*

Teaching Experience

UC San Diego, Department of Psychology

2023 PSYCH 106 Behavioral Neuroscience

2022 PSYCH 102 Sensory Neuroscience

2021 PSYCH 105 Cognitive Psychology
PSYCH 104 Social Psychology
2020 PSYCH 3 Foundations of Cognitive Psychology
2019 PSYCH 100 Clinical Psychology
Responsibilities: Guest lecture a class session, assist with exam preparation and teaching, grade written assignments, and hold weekly office hours.

Outreach

2021 Gave a talk on Bayesian reasoning and program synthesis to high school students in Pathways2AI.

Mentorship

2022- Nora Chen, Honors thesis student.
2021-2022 Jane Yang, Honors thesis student, now at UT Austin.

Academic Service

2023 Reviewer of CogSci.

Skills

Modelling and Analysis: Python, PyTorch, Julia, Gen, R, MATLAB, C++
Experimental Design: JavaScript, HTML, CSS
Software and Tools: git, Adobe CC, LaTeX

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