

# Haoliang Wang

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## Academic Positions

2024- *Postdoctoral Associate*, Brain and Cognitive Sciences, MIT

## Education

2019-2024 *PhD*, Experimental Psychology, UC San Diego

2015-2019 *BS*, Automation, Xi'an Jiaotong University

## 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).

2017 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).

2016 The First Prize of Contemporary Undergraduate Mathematical Contest in Modeling (CUMCM).

## Publications

\* indicates equal contribution

2025 **Wang, H.**, Gothoskar, N., Tenenbaum, J., and Smith, K.. From pixels to physics: an image-computable model of physical predictions. *Proceedings of the 47th Annual Meeting of the Cognitive Science Society*.

2024 Jedoui, K., Venkatesh, R., **Wang, H.**, O'Connell, T., Bai, Y., Tenenbaum, J., Fan, J., Smith, K., and Yamins, D.. Towards task-appropriate readout mechanisms for physical scene understanding. *Cognitive Computational Neuroscience 2024*.

2024 **Wang, H.**, Jedoui, K., Venkatesh, R., Binder, F., Tenenbaum, J., Yamins, D., Fan, J., and Smith, K.. Probabilistic simulation supports generalizable intuitive physics. *Proceedings of the 46th Annual Meeting of the Cognitive Science Society*.

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. *Society for 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

- 2025 From pixels to physics: an image-computable model of physical predictions: Poster presented at *47th Annual Meeting of the Cognitive Science Society*.
- 2024 Probabilistic simulation supports generalizable intuitive physics: Poster presented at *46th Annual Meeting of the Cognitive Science Society*.
- 2023 Modeling and evaluating how the brain makes physical predictions: Poster presented at *Society for 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

2024 PSYCH 105 Cognitive Psychology  
PSYCH 105 Cognitive Psychology  
2023 PSYCH 106 Behavioral Neuroscience  
PSYCH 105 Cognitive Psychology  
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

### MIT, Department of Brain and Cognitive Sciences

2025- Tianai Yue, Undergraduate visiting student

### UC San Diego, Department of Psychology

2022-2023 Nora Chen, Undergraduate honors thesis student, now at UC Berkley.  
2021-2022 Jane Yang, Undergraduate 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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