

# Michael Chong Wang

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Hanover, New Hampshire 03755, U.S.A.

## EDUCATION

- **Dartmouth College** Sep 2021 - Present  
*Ph.D in Cognitive Neuroscience* Hanover, NH
  - Advisor: Alireza Soltani
- **Washington University in St. Louis** Aug 2017 - May 2021  
*B.S. in Computer Science, summa cum laude* St. Louis, MO
  - Second major in Cognitive Neuroscience. Cum. GPA: 3.99/4.00

## RESEARCH INTERESTS

- Computational modeling of human reinforcement learning, with a focus on interactions with attention and representation learning
- Analysis of neural data to uncover dynamic and population-level mechanisms underlying flexible and adaptive behavior
- Mechanistic interpretability of task-optimized biologically plausible recurrent neural networks to draw parallels to biological computation

## AWARDS AND SCHOLARSHIPS

- **Guarini Travel Award** Dartmouth Fall 2025
- **Marie A. Center 1982 Award for Excellence in Research** Dartmouth Spring 2025
- **Membership in Tau Beta Pi - Engineering Honor Society** WUSTL Spring 2020
- **Summer Undergraduate Research Award** WUSTL Summer 2019
- **Antoinette Frances Dames Award for Productive Scholarship in Engineering** WUSTL Spring 2019
- **Dean's List** WUSTL Fall 2017 – Fall 2019

## PUBLICATIONS (\* EQUAL CONTRIBUTION)

- **Wang, M. C.**, & Soltani, A. (in prep). Selective activation of orthogonal neural subspaces supports attentional modulation of learning in multidimensional environments.
- Woo, J. H.\*, **Wang, M. C.\***, Bartolo, R., Averbeck, B. B., Soltani, A. (in prep). Dynamic model arbitration via modulation of population codes in the prefrontal cortex.
- Lewis, C.\*, **Wang, M. C.\***, Farashahi, S.\*, Salholz-Hillel, M., & Soltani, A. (in prep). Dynamic valuation via range normalization in uncertain, changing reward contexts.
- Yazdanpanah, A.\*, **Wang, M. C.\***, Trepka, E., & Soltani, A. (in submission). Contributions of statistical learning to learning from reward feedback. *bioRxiv*, 2024-04
- **Wang, M. C.**, & Soltani, A. (2025). Contributions of attention to learning in multidimensional reward environments. *Journal of Neuroscience*, 45(7).
- Singh, M. F., **Wang, M.**, Cole, M. W., & Ching, S. (2022). Efficient identification for modeling high-dimensional brain dynamics. In *2022 American Control Conference (ACC)* (pp. 1353-1358). IEEE.

## TALKS

- **Wang, M. C.**, Lewis, C., Farashahi, S., Salholz-Hillel, M., & Soltani, A. (2025, Nov 4) Dynamic valuation via range normalization in uncertain, changing reward contexts. Cognitive Brown Bag, Dartmouth College
- **Wang, M. C.**, & Soltani, A. (2025, Feb 24). Interactions between model-based reinforcement learning and selective attention. Cognitive Brown Bag, Dartmouth College.
- **Wang, M. C.**, & Soltani, A. (2024, Jan 9). Circuit mechanisms for learning and attention in multidimensional environments. Cognitive Brown Bag, Dartmouth College.
- **Wang, M. C.**, Mu, J., & Goodman, N. D. (2021, Aug 14). Learning Disentangled Visual Representations with the Help of Language. CSLI internship presentation, Stanford University.

## CONFERENCE PRESENTATIONS (\* EQUAL CONTRIBUTION)

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- **Wang, M. C., & Soltani, A. (2025).** Selective activation of orthogonal neural subspaces supports attentional modulation of learning in multidimensional environments. Poster presentation at Society for Neuroscience Meeting.
- Woo, J. H.\*, **Wang, M. C.\***, Bartolo, R., Averbeck, B. B., Soltani, A. (2025). Neural mechanisms of model arbitration in the prefrontal cortex. Poster presentation at Society for Neuroscience Meeting.
- Lewis, C.\*, **Wang, M. C.\***, Farashahi, S., Salholz-Hillel, M., & Soltani, A. (2025). Dynamic valuation via range normalization in uncertain, changing reward contexts. Poster presentation at Society for Neuroeconomics Meeting.
- **Wang, M. C., & Soltani, A. (2024).** Recurrent circuit mechanisms for reward learning in multidimensional environments. Poster presentation at Conference on Cognitive Computational Neuroscience.
- Woo, J. H.\*, **Wang, M. C.\***, Bartolo, R., Averbeck, B. B., Soltani, A. (2024). Behavioral and neural evidence for dynamic model arbitration in dorsolateral prefrontal cortex. Poster presentation at Conference on Cognitive Computational Neuroscience.
- Yazdanpanah, A.\*, **Wang, M. C.\***, Benz, M. P., & Soltani, A. (2023). Temporal regularities guide feature-based learning in complex reward environments. Poster presentation at Society for Neuroscience Meeting.
- **Wang, M. C., & Soltani, A. (2023).** Network mechanisms underlying value-based attention in multi-dimensional reward learning. Poster presentation accepted and withdrawn from Bernstein Conference.
- **Wang, M. C., & Soltani, A. (2022).** Contributions of attention to learning in high dimensional environments. Poster presentation at Society for Neuroscience Meeting.
- **Wang, C., & Ching, S. (2019).** Biologically plausible recurrent Infomax learning. Poster presentation at WUSTL's Undergraduate Research Symposium.

## RESEARCH EXPERIENCE

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- **Computational and Cognitive Neuroscience Lab** *Aug 2021 - Present*  
Dartmouth College  
*Graduate Student*
  - Advisor: Alireza Soltani
  - Combining novel behavioral models, neural data analysis, and recurrent neural networks to study the computational mechanisms of flexible reinforcement learning in complex environments.
  - Co-written NSF Research Experiences for Undergraduates Supplement. Awarded in Spring 2024.
- **Cognitive Control and Pathology Lab at WUSTL** *Aug 2020 - May 2021*  
WUSTL  
*Undergraduate Thesis Student*
  - Advisor: Todd Braver
  - Thesis title: Generative Modeling of Brain Dynamics and Functional Connectivity from MEG
- **Stanford Center for the Study of Language and Information** *Jun 2020 - Aug 2020*  
Stanford University  
*Summer Research Intern*
  - Advisor: Noah Goodman
  - Project title: Learning Disentangled Visual Representations with the Help of Language
- **Brain Dynamics and Control Research Group** *Nov 2018 - May 2021*  
WUSTL  
*Undergraduate Research Assistant*
  - Advisor: ShiNung Ching
  - Project title: Modulated Local Plasticity for Meta-Learning in Recurrent Neural Networks
- **Dynamic Cognition Lab** *Sept 2017 - Aug 2019*  
WUSTL  
*Undergraduate Research Assistant*
  - Advisor: Jeffrey Zacks

## TEACHING AND MENTORING

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- **Teaching assistant** *Dartmouth College*  
Fall 2024
  - Perception Winter 2024
  - Introduction to Neuroscience (Guest lecture on the Resting Brain, Attention, and Consciousness) Fall 2022, Summer 2023
  - Laboratory in Psychological Sciences (Held review session for probability and statistics)
- **Student mentoring** *Dartmouth College*  
Winter 2024 - present
  - Caroline Fore (Women in Science Program) Fall 2024 - present
  - Cara Lewis (EE Just Fellow) Winter 2024 - Spring 2024
  - Seoyoon (Evelyn) Choi (Women in Science Program) Winter 2023 - Spring 2023
  - Marissa Benz (Women in Science Program)
- **Computer Science Tutor** *WUSTL*  
Sept 2018 – Dec 2019
  - Undergraduate Student Services

## SERVICES

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- **Journal Reviewer**

- PLOS Computational Biology, Nature Human Behavior

- **NSF Outreach**

*Apr 2023, Apr 2024, Oct 2025*

- Introduction to scientific research at local high schools

- **Graduate Research Roundtable**

*Sept 2022 - May 2023*

- Co-organized bi-weekly graduate student meetings for career development and community building

- **Synapse Neuroscience Club**

*Sept 2018 - Dec 2018*

## SKILLS

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- **Programming:** Proficient in Python, MATLAB, R. Familiar with C++, Java, HTML, CSS, and Javascript.
- **ML/Modeling:** Deep learning (PyTorch), probabilistic programming (NumPyro, JAX), mixed effects modeling (lme4, glmer)
- **Data visualization& Experiment:** experiment design (jsPsych, PsychoPy), data wrangling (pandas, tidyverse), data visualization (Matplotlib, Seaborn, ggPlot)
- **Tools:** Git, Bash, Jupyter