

Shufan Mao

University of Illinois Urbana-Champaign , IL, United States, 61801

Tele: 424-320-1678, Email: smao9@illinois.edu

Research Interests

Semantic Memory, Meaning Representation, Knowledge Representation, Distributional Models, Network Modeling

Education

Bachelor of Science in Mathematics Jun. 2015
Beijing Institute of Technology

Master of Science in Mathematics May. 2018
University of Illinois Urbana-Champaign

Master of Science in Psychology May. 2021
University of Illinois Urbana-Champaign

Doctor of Philosophy in Psychology Dec. 2023
University of Illinois Urbana-Champaign

Publications

Mao, S., Huebner, P. A., Willits, J. A. (under review). Structured Graphs Built from Distributional Information Facilitate Compositional Generalization in Language.

Mao, S., Huebner, P., & Willits, J. (2025). Success and failure of compositional generalisation in distributional models of language. *Language, Cognition and Neuroscience*, 1–29.
<https://doi.org/10.1080/23273798.2024.2443861>

Mao, S., Huebner, P. A., & Willits, J. (2024). Compositional Generalization in Distributional Models of Semantics: Transformer-based Language Models are Architecturally Advantaged. *Proceedings of the Annual Meeting of the Cognitive Science Society*, 46.
<https://escholarship.org/uc/item/5h55z27v>

Mao, S., Huebner, P. A., & Willits, J. A. (2024). Spatial versus graphical representation of distributional semantic knowledge. *Psychological review*, 131(1), 104–137.
<https://doi.org/10.1037/rev0000451>

Mao, S., Huebner, P. A., Willits, J. A. (2022) Compositional Generalization in a Graph-based Model of Distributional Semantics. *Proceedings of the 44th Annual Conference of the Cognitive Science Society*. (pp. 1993-1999)

Conference Presentations

Conference Talk: Structural and Processing Equivalence Between Graphical and Vector-Based Representations, at Psychonomic Society 64th Annual Meeting

Nov. 2024/New York, NY

Conference Talk: Compositional Generalization in Distributional Models of Semantics: Transformer-based Language Models are Architecturally Advantaged at the 46th Annual Meeting of the Cognitive Science Society

July 2024/Rotterdam, The Netherlands

Conference Talk: Distributional Models on Compositional Generalization Inference, at 53rd Annual Meeting of the Society for Computation in Psychology

Nov. 2023/San Francisco, CA

Poster Presentation: Compositional Generalization in a Graph-based Model of Distributional Semantics, at Psychonomic Society 64th Annual Meeting

Nov. 2023/San Francisco, CA

Poster Presentation: Addressing the Challenges of Compositional Generalization: A Comparative Study of Models of Language Learning and Representation, at the 48th Boston University Conference on Language Development

Nov. 2023/Boston, MA

Poster Presentation: Compositional Generalization in a Graph-based Model of Distributional Semantics, at the 44th Annual Meeting of the Cognitive Science Society

July 2022/Toronto, Canada

Poster Presentation: Spatial vs. Graphical Representation of Distributional Semantics, at the 42nd Annual Meeting of the Cognitive Science Society

July 2020/Virtual

Invited Talks

Distributional Graph: Connecting Language Towards a Representation of Knowledge and Meaning, at Language Learning and Meaning Acquisition Lab, Purdue

Oct. 2023/Purdue University

Teaching Experience

Math Teaching Assistant at UIUC

Courses participated as teaching assistant:

- Math115: Preparation for Calculus
- Math285/286: Differential Equations
- Math444: Elementary Real Analysis
- Math461: Probability Theory (undergraduate)
- Math489: Dynamics and Differential Equations
- Math561: Probability Theory I
- Math564: Stochastic Process

Psychology Teaching Assistant at UIUC

Courses participated as teaching assistant/instructor:

- Psyc224: Cognitive Psychology
- Bcog200: Introduction to Programming for Brain & Cognitive Science
- Psyc100: Intro Psych (instructor)
- Bcog100: Introduction to the Brain and Cognitive Science (Instructor)

Other Information

Programming and Software: Python, C

Language: Native in Chinese

Fluent in English

Basic in Japanese

Nationality: People's Republic of China

Permanent Residency: United States of America