Kushin Mukherjee

Postdoctoral scholar

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Appointments

2025– *Postdoctoral scholar*, Psychology, Stanford University
Advisor: Judith E. Fan

Education

2019-2025 *PhD*, Psychology, University of Wisconsin-Madison
Advisors: Timothy T. Rogers, Karen B. Schloss

2015-2019 *AB*, Cognitive Science and Japanese, minor in Mathematics, Vassar College
Thesis advisor: Joshua R. de Leeuw
general honors
departmental honors in Cognitive Science and Japanese

Grants, honors, & awards

2025 Best Paper Honorable Mention, **IEEE VIS**
2025 Computational Modeling Prize in Applied Cognition, **Cognitive Science Society**
2025 Best Paper Award, **ICLR Workshop on Bidirectional Human-AI Alignment**
2025 Student Research Grants Competition Travel Award, **UW-Madison**
2025 Distinguished Paper Award, McPherson Eye Research Institute, **UW-Madison**
2021–2025 Hertz Travel Award, Department of Psychology, **UW-Madison**
2021 Center for Brain, Minds, and Machines Summer School Fellow, **MIT**
2021 Best Paper Honorable Mention, **IEEE VIS**
2021 Kenzi Valentyn Vision Research Award, McPherson Eye Research Institute, **UW-Madison**
2021 Elsevier Travel Award, **Vision Sciences Society**
2020–2022 Marie Christine Kohler Fellow, Wisconsin Institute for Discovery, **UW-Madison**
2019 Yin-Lien C. Chin Prize for best senior project in Chinese or Japanese, **Vassar College**
2019 Phi Beta Kappa, **Vassar College**
2019 Sigma Xi, **Vassar College**
2018 CSLI Summer Intern, **Stanford University**
2018 Psi Chi, **Vassar College**
2016 Summer Program Scholarship, **Ochanomizu University**
2016 Japan Student Service Organization Scholarship

2015-2019 Sarah Tod Fitz Randolph Scholarship Fund, **Vassar College**

Research Experience

06 - 09, 2024 **AI/ML Intern**, Apple
08, 2021 **Summer School Fellow**, MIT Center for Minds, Brains, and Machines
06 - 08, 2018 **CSLI Summer Intern**, Stanford University

Working Papers & Preprints

- Studdiford, Z., Rogers, T. T., Suresh, S.*, & **Mukherjee, K.*** (*under revision*). Evaluating Steering Techniques using Human Similarity Judgments.
- Studdiford, Z., Rogers, T. T., **Mukherjee, K.***, & Suresh, S.* (*under revision*). Uncovering the Computational Ingredients of Human-Like Representations in LLMs.
- **Mukherjee, K.**, Rogers, T. T., Lessard, L., Gleicher, M., & Schloss, K. B. (*under review*). Color-concept associations reveal a new conceptual space.
- Verma, A., **Mukherjee, K.**, Potts, C., Kreiss, E.& Fan, J. (*under review*). CHART-6: Human-centered evaluation of data visualization understanding in vision-language models.
- **Mukherjee, K.**, Yin, B., Lessard, L., & Schloss, K. B. (*in prep*). How do people map colors to concepts? Modeling assignment inference as evidence accumulation.

Peer-reviewed Archival Publications

2026 **Mukherjee, K.**, Mohapatra, A., Rogers, T. T., & Schloss, K. B. (2026). Large language models estimate fine-grained human color-concept associations. *Cognitive Science.*

2026 **Mukherjee, K.**, Huey, H., Hebart, M. N., Fan, J. E.,& Bainbridge, W. A. (2026). Drawings-of-THINGS: A large-scale dataset containing human sketches of 1,854 object concepts. *Behavior Research Methods.*

2026 Chen, A., Kim, S. S. Y., Franyutti, A., Dharmasiri, A., **Mukherjee, K.**, Fan, J. E., & Russakovsky, O. (2026). Presenting large language models as companions affects what mental capacities people attribute to them. *Proceedings of the CHI Conference on Human Factors in Computing Systems*

2025 Braun, H., **Mukherjee, K.**, Gorelik, S. R. & Schloss, K. B. (2025). Affective color scales for colormap data visualizations. *IEEE Transactions on Visualization and Computer Graphics.* ***Best paper honorable mention award***

2025 **Mukherjee, K.**, Ren, D., Moritz, D., & Assogba, Y. (2025). EncQA: Evaluating visual encoding understanding for visualizations in large vision-language models. *IEEE Transactions on Visualization and Computer Graphics.*

2025 Suresh, S.*, **Mukherjee, K.***, Giallanza, T., Yu, X., Patil, M., Cohen, J. D., *&* Rogers, T. T. (2025). AI-Enhanced Semantic Feature Norms for 786 Concepts. *TopiCS in Cognitive Science.*

2025 **Mukherjee, K.**, *&* Rogers. T. T. (2025). Using drawings and deep neural networks to characterize the building blocks of human visual similarity. *Memory & Cognition.*

2023 Suresh, S., **Mukherjee, K.**, Yu, X., Huang, W., Padua, L., *&* Rogers, T. T. (2023). Conceptual structure coheres in human cognition but not in large language models. *Proceedings of the Conference on Empirical Methods in Natural Language Processing (EMNLP).*

2023 **Mukherjee, K.**, Lu, X., Huey, H., Vinker, Y., Shamir, A., *&* Fan, J. E. (2023). SEVA: Leveraging sketches to evaluate alignment between human and machine visual abstraction. *Advances in Neural Information Processing Systems (NeurIPS), Datasets & Benchmarks Track.*

2021 **Mukherjee, K.**, Yin, B., Sherman B. E., Lessard, L. *&* Schloss, K. B. (2021). Context matters: Semantic discriminability theory for perceptual encoding systems. *IEEE Transactions on Visualization and Computer Graphics.* ****Best paper honorable mention award***

Peer-reviewed Proceedings *&* Workshop Papers

2025 Suresh, S.*, **Mukherjee, K.***, Giallanza, T., Yu, X., Patil, M., Cohen, J. D., *&* Rogers, T. T. (2025). AI-assisted semantic norms for 786 concepts. *ICLR Workshop on Bidirectional Human-AI Alignment.* ****Best paper award***

2025 Suresh, S.*, **Mukherjee, K.***, Giallanza, T., Yu, X., Patil, M., Cohen, J. D., *&* Rogers, T. T. (2025). AI-assisted semantic norms for 786 concepts. *Proceedings of the 47th Annual Meeting of the Cognitive Science Society.* ****Modeling prize in applied cognition***

2024 **Mukherjee, K.** (2024). Shaping vision through drawing. *Nature Reviews Psychology.*

2024 Verma, A., **Mukherjee, K.**, Kreiss, E., Potts, C., and Fan, J. (2024). Evaluating human and machine understanding of data visualizations. *Proceedings of the 46th Annual Meeting of the Cognitive Science Society.*

2024 **Mukherjee, K.**, Suresh, S., Yu, X., *&* Lupyan, G. (2024). The role of shared labels and shared experiences in representational alignment. *International Conference on Learning Representations (ICLR) Re-Align Workshop*

2024 Suresh, S., Huang, W., **Mukherjee, K.**, *&* Rogers, T.T. (2024). Categories vs semantic features: What shapes the similarities people discern in photographs of objects? *International Conference on Learning Representations (ICLR) Re-Align Workshop*

2023 **Mukherjee, K.**, Kim, N. Y, Alamooti, S. T., Adolphs, R., *&* Kar, K. (2023). Leveraging Artificial Neural Networks to Enhance Diagnostic Efficiency in Autism Spectrum Disorder: A Study on Facial Emotion Recognition. *Conference on Cognitive Computational Neuroscience.*

2023 **Mukherjee, K.**, Lu, X., Huey, H., Vinker, Y., Shamir, A., *&* Fan, J. E. (2023). Evaluating machine comprehension of sketch meaning at different levels of abstraction. *Proceedings of the 45th Annual Meeting of the Cognitive Science Society.*

2023 Suresh, S., **Mukherjee, K.** *&* Rogers, T. T. (2023). Semantic Feature Verification in `FLAN-T5`. *International Conference on Learning Representations (ICLR), Tiny Papers Track.*

2023 **Mukherjee, K.**, Suresh, S. *&* Rogers. T. T. (2023). Human-machine cooperation for semantic feature generation. *International Conference on Learning Representations (ICLR), Tiny Papers Track.*

2020 **Mukherjee, K.**, *&* Rogers, T. T. (2020). How does task structure shape representations in deep neural networks? *2nd NeurIPS Workshop on Shared Visual Representations in Human and Machine Intelligence.*

2019 **Mukherjee, K.**, Hawkins, R. D., *&* Fan, J. E. (2019). Communicating semantic part information in drawings. *Proceedings of the 41st Annual Meeting of the Cognitive Science Society.*

Book Chapters

2024 Schloss, K. B., Schoenlein, M. A., *&* **Mukherjee, K.** (2024). Color semantics for visual communication. *In R. B. D. A. Szafir, M. Chen, D. J. Edward, B. Fisher, & L. M. Padilla (Ed.), Visualization Psychology.*

Conference Presentations

2026 **Mukherjee, K.** *&* Fan, J. E. (2026). Designers choose to show data visualizations that observers can reliably interpret. Poster presented at the 26th Annual Meeting of the Vision Sciences Society.

2026 Tomz, D., **Mukherjee, K.**, Wisher, I., Wullf, F., Braedder, L., Yan, C., Tversky, B., Fusaroli, R., Tylén, K., *&* Fan, J. E. (2026). Identifying the visual features of European Paleolithic cave paintings that are diagnostic of category, age, and location. Poster presented at the 26th Annual Meeting of the Vision Sciences Society. ****Vision Sciences Society Travel Award***

2025 **Mukherjee, K.**, Ren, D., Moritz, D. *&* Assogba, Y. (2025). EncQA: Evaluating visual encoding understanding for visualizations in large vision-language models. Talk presented at IEEE VIS 2025.

2025 Braun, H., **Mukherjee, K.**, Gorelik, S. R. *&* Schloss, K. B. (2025). Affective color scales for colormap data visualizations. Talk presented at IEEE VIS 2025.

2025 Chinni, A., Colón, Y. I., **Mukherjee, K.**, Gleicher, M. L., *&* Schloss, K. B. (2025). Development of the NBT-53 Texture Library for the Study of Texture Semantics. Poster presented at the 66th Annual Meeting of the Psychonomic Society.

2025 Braun, H., **Mukherjee, K.**, Gorelik, S. R. *&* Schloss, K. B. (2025). Affective color scales for colormap data visualizations. Poster presented at the 25th Annual Meeting of the Vision Sciences Society.

2025 Chinni, A., Colón, Y. I., **Mukherjee, K.**, Gleicher, M. L., *&* Schloss, K. B. (2025). Development of the NBT-53 Texture Library for the Study of Texture Semantics. Poster presented at the 25th Annual Meeting of the Vision Sciences Society.

2025 Suresh, S. **Mukherjee, K.**, Giallanza, T., Yu, X., Patil, M., Cohen, J. D., *&* Rogers, T. T. (2025). AI-assisted semantic norms for 786 concepts. Talk presented at the 47th Annual Meeting of the Cognitive Science Society.

2025 Li, Z., Colón, Y. I., **Mukherjee, K.**, Rogers, T. T. (2025). Iterated LASSO reveals highly distributed and variable representations of faces, places, and objects. Poster presented at the 47th Annual Meeting of the Cognitive Science Society.

2025 Suresh, S. **Mukherjee, K.**, Giallanza, T., Yu, X., Patil, M., Cohen, J. D., *&* Rogers, T. T. (2025). AI-assisted semantic norms for 786 concepts. Talk and Poster presented at the Bi-Align Workshop at ICLR.

2024 **Mukherjee, K.**, Rogers, T. T., *&* Schloss, K. B. (2024). Estimating human color-concept associations from multimodal language models. Poster presented at the 46th Annual Meeting of the Cognitive Science Society.

2024 Verma, A., **Mukherjee, K.**, Kreiss, E., Potts, C., and Fan, J. (2024). Evaluating human and machine understanding of data visualizations. Poster presented at the 46th Annual Meeting of the Cognitive Science Society.

2024 Suresh, S., **Mukherjee, K.**, *&* Rogers, T. T. (2024). Can deep convolutional networks explain the semantic structure that humans see in photographs? Poster presented at the 46th Annual Meeting of the Cognitive Science Society.

2023 **Mukherjee, K.**, Kim, N. Y, Alamooti, S. T., Adolphs, R., *&* Kar, K.. (2023). Leveraging Artificial Neural Networks to Enhance Diagnostic Efficiency in Autism Spectrum Disorder: A Study on Facial Emotion Recognition. Talk and Poster presented at the Conference on Cognitive Computational Neuroscience.

2023 **Mukherjee, K.**, Lessard, L., *&* Schloss K. B. (2023). How do people map colors to concepts? Modeling assignment inference as evidence accumulation. Talk presented at the 23rd Annual Meeting of the Vision Sciences Society.

2023 Suresh, S., **Mukherjee, K.**, *&* Rogers T. T. (2023). Can deep convolutional networks explain the semantic structure that humans see in photographs? Talk presented at the 23rd Annual Meeting of the Vision Sciences Society.

2023 Fan, J. E., **Mukherjee, K.**, Huey, H., Hebart, M., *&* Bainbridge, W. (2023). THINGS-drawings: A large-scale dataset containing human sketches of 1,854 object concepts. Talk presented at the 23rd Annual Meeting of the Vision Sciences Society.

2023 **Mukherjee, K.**, Lu, X., Huey, H., Vinker, Y., Shamir, A., *&* Fan, J. E. (2023). Evaluating machine comprehension of sketch meaning at different levels of abstraction. Poster presented at the 23rd Annual Meeting of the Vision Sciences Society.

2022 Armendariz, M., **Mukherjee, K.**, Shang, J., *&* Kar, K. (2022). Probing the functional relevance of side-reads and bypass-connections in the primate ventral stream during visual object recognition using deep neural networks. Poster presented at the 22nd Annual Meeting of the Vision Sciences Society.

2022 **Mukherjee, K.**,Schloss, K. B, Lessard, L., Gleicher, M., *&* Rogers, T.T. (2022). Color-concept associations reveal an abstract conceptual space. Poster presented at the 22nd Annual Meeting of the Vision Sciences Society.

2021 **Mukherjee, K.**, Rogers, T.T., Lessard, L., Gleicher, M., *&* Schloss, K. B. (2021). Mapping a low-dimensional space of color-concept associations. Poster presented at the 21st Annual Meeting of the Vision Sciences Society. ****Vision Sciences Society Travel Award***

2021 **Mukherjee, K.**, Yin, B., Sherman B. E., Lessard, L. *&* Schloss, K. B. (2021). Context matters: Semantic discriminability theory for perceptual encoding systems. Talk presented at the 62nd Annual Meeting of the Psychonomic Society.

2021 **Mukherjee, K.**, Yin, B., Sherman B. E., Lessard, L. *&* Schloss, K. B. (2021). Context matters: Semantic discriminability theory for perceptual encoding systems. Talk presented at IEEE VIS 2021.

2020 **Mukherjee, K.**, *&* Rogers, T. T. (2020). How does task structure shape representations in deep neural networks? Poster presented at the 2nd NeurIPS Workshop on Shared Visual Representations in Human and Machine Intelligence.

2020 **Mukherjee, K.**, *&* Rogers, T. T. (2020). Finding meaning in simple sketches: How do humans and deep networks compare? Poster presented at the 20th Annual Meeting of the Vision Sciences Society.

2019 **Mukherjee, K.**, Hawkins, R. D., *&* Fan, J. E. (2019). Communicating semantic part information in drawings. Poster presented at the 41st Annual Meeting of the Cognitive Science Society.

Invited Talks *&* Seminars

2026 Using drawings and data visualizations to express knowledge, *UIUC Attention & Perception Seminar.*

2026 Using drawings and data visualizations to express knowledge, *Stanford FriSem.*

2025 Cognitive abstractions for visual communication, *McPherson Eye Research Institute Seminar.*

2025 What makes different graphs effective for answering different questions? *Nightingale Labs, Stanford University.*

2025 Perceptual semantics for visual and haptic communication. *Wisconsin Institute for Discovery Seminar Series.*

2024 EncQA: Evaluating visual encoding understanding for visualizations in large vision-language models, *Apple Human Centered Machine Intelligence Sync.*

2023 Using drawings to understand human semantic cognition, MRC Cognition and Brain Sciences Unit, *University of Cambridge.*

2023 THINGS-drawings: A large-scale dataset containing human sketches of 1,854 object concepts, Cognitive Brown Bag, *University of Chicago.*

2023 THINGS-drawings: A large-scale dataset containing human sketches of 1,854 object concepts, Cognitive Tools Lab, *UC San Diego.*

2023 Evaluating machine comprehension of sketch meaning at different levels of abstraction, Stanford NeuroAI Lab, *Stanford University.*

2023 Tutorial on matrix completion techniques for the behavioral sciences, *AI and Society Seminar, UW-Madison.*

2023 Using drawings and deep neural networks to characterize the building blocks of human visual similarity, *Wisconsin Institute for Discovery Seminar Series.*

2022 Using line drawings to understand what deep learning models see, *McPherson Eye Research Institute Seminar*

Teaching

Graduate Teaching Assistant, University of Wisconsin-Madison

2022 PSYCH 454, *Behavioral Neuroscience*
2021 PSYCH 210, *Statistics for Psychology*
2020 PSYCH 414, *Cognitive Psychology*

Undergraduate Teaching Assistant, Vassar College

2017 COGS 211, *Perception and Action*

Advising

Undergraduate students

2025 - Avery Yue (Stanford)
2025 - David Tomz (Stanford)
2025 - Zach Studdiford (UW-Madison)
2024 - 2025 Rainy Jin (UW-Madison)
2024 - 2026 Halle Braun (UW-Madison)
2024 - 2025 Ria Pattekar (UW-Madison)
2024 - 2025 Ankit Mohapatra (UW-Madison)
2023 - 2024 Nancy Davis (UW-Madison)
2022 - 2023 Jonah Manaligold (UW-Madison)
2022 - 2023 Janani Sundar (UW-Madison)
2022 - 2023 Rio Aguina-Kang (UCSD)
2022 Lisa Padua (Albany State)
2020 - 2021 Brianne E. Sherman (UW-Madison)

Professional Service

Workshop Organization

2026 ReAlign: ICLR Workshop on Representational Alignment, *14th International Conference on Learning Representations*
2024 COGGRAPH: Building bridges between cognitive science and computer graphics, *46th Annual Meeting of the Cognitive Science Society*
2022 Images2Symbols: Drawing as as Window into the Mind, *44th Annual Meeting of the Cognitive Science Society*

Program Committees

2025 VIS×AI: Workshop on Visualization for AI Explainability, *IEEE VIS*

Ad Hoc Reviewing

Journals & Books
Nature, Cognition, Open Mind, Communications Biology, Nature Reviews Psychology, Transactions on Visualization and Computer Graphics (TVCG), EPJ Data Science, Visualization Psychology
Conference Proceedings and Workshops
Association of Computational Linguistics (ACL), International Conference on Learning Representations (ICLR), Conference on Computational Cognitive Neuroscience (CCN), IEEE Vis (VIS), ACM Conference on Human Factors in Computing Systems (CHI), SIGGRAPH, Annual Meeting of the Cognitive Science Society (CogSci), NeurIPS Workshop on Shared Visual Representations in Humans and Machines (SVRHM), ICLR Workshop on Representational Alignment (ReAlign)

Departmental Service

2020-2022 University of Wisconsin-Madison Psychology Colloquium Committee
2017-2019 Vassar College Cognitive Science Majors' Committee, *Chair*
2016-2017 Vassar College Student Association Finance Committee

Affiliations

2019- Cognitive Science Society
2020- Vision Sciences Society
2021-2022 Psychonomics Society

References

Dr. Timothy T. Rogers | University of Wisconsin-Madison, Department of Psychology
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Madison, WI 53706-1611
email: ttrogers@wisc.edu

Dr. Karen B. Schloss | University of Wisconsin-Madison, Department of Psychology
1202 West Johnson St.
Madison, WI 53706-1611
email: kschloss@wisc.edu

Dr. Judith E. Fan | Stanford University, Department of Psychology
Building 420, 450 Jane Stanford Way
Stanford, CA 94305
email: jefan@stanford.edu