

Dr. Paul S. Scotti

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Goal: Bridging neuroscience and AI to decode mental representations and drive healthcare innovation.

EXPERIENCE & EDUCATION

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|---|---|
| Computational Memory Lab (PI: Dr. Kenneth Norman)
<i>Postdoctoral Research Associate at Princeton Neuroscience Institute</i> | Apr. 2022 – Present
<i>Princeton, NJ</i> |
| Stability AI / Medical AI Research Center (MedARC)
<i>Neuroimaging & AI project lead (medarc-ai.github.io/mind-reading)</i> | Feb. 2023 – Present |
| Vision and Cognitive Neuroscience Lab (PI: Dr. Julie Golomb)
Cognitive Control Lab (PI: Dr. Andy Leber)
<i>Ph.D. student (co-advised) at The Ohio State University</i>
<i>Dissertation on “Using Computational Models to Observe Visual Memory Distortions and Reconstruct Content from the Brain”</i> | Oct. 2017 – Apr. 2022

<i>Columbus, OH</i> |
| Attention and Cognition Lab (PI: Dr. Sarah Shomstein)
Visual Cognition Lab (PI: Dr. Steve Mitroff)
<i>Undergraduate researcher at George Washington University</i>
<i>Distinguished/Honors scholar, magna cum laude, <u>2017 commencement speaker</u></i> | Sep. 2014 – May 2017
Sep. 2016 – May 2017

<i>Washington, DC</i> |

PUBLICATIONS

1. **Scotti, P. S.**, Banerjee, A., Goode, J., Shabalin, S., Nguyen, A., Cohen, E., Dempster, A. J., Verlinde, N., Yundler, E., Weisberg, D., Norman, K. A., & Abraham, T. M. (2023). Reconstructing the Mind's Eye: fMRI-to-Image with Contrastive Learning and Diffusion Priors. *NeurIPS spotlight*. doi.org/10.48550/arXiv.2305.18274. **Submitted to US Senate for hearing on AI and Intellectual Property.**
2. Babu, A., **Scotti, P. S.**, & Golomb, J. D. (2023). The dominance of spatial information in object identity judgments: A persistent congruency bias even amidst conflicting statistical regularities. *Journal of Experimental Psychology: Human Perception and Performance*. doi.org/10.1037/xhp0001104
3. Wallace, G., Polcyn, S., Brooks, P. P., Mennen, A., Zhao, K., **Scotti, P. S.**, Michelmann, S., Li, K., Turk-Browne, N. B., Cohen, J. D., Norman, K. A. (2022). RT-Cloud: A Cloud-based Software Framework to Simplify and Standardize Real-Time fMRI. *NeuroImage*. doi.org/10.1016/j.neuroimage.2022.119295
4. **Scotti, P. S.** & Maxcey, A. M. (2022). Directed forgetting of pictures of everyday objects. *Journal of Vision*. doi.org/10.1167/jov.22.10.8
5. Maxcey, A. M., Mancuso, E., **Scotti, P. S.**, Spinelli, E., & Woodman, G. F. (2022). How to induce the forgetting of pictures. *Visual Memory* (Routledge). Eds. Wilma Bainbridge & Timothy Brady. ISBN 9780367744878.
6. **Scotti, P. S.**, Kulkarni, A., Mazor, M., Klapwijk, E., Huth, A. G. (2021). Interactive 3d brain helps you learn how the brain is organized. *Frontiers for Young Minds*. doi.org/10.3389/frym.2021.575131
7. **Scotti, P. S.**, Chen, J., & Golomb, J. D. (2021). An enhanced inverted encoding model for neural reconstructions. *bioRxiv*. doi.org/10.1101/2021.05.22.445245
8. **Scotti, P.S.** & Maxcey, A. M. (2021). What do laboratory-forgetting paradigms tell us about use-inspired forgetting? *Cognitive Research: Principles and Implications*. doi.org/10.1186/s41235-021-00300-6
9. Chen, J., **Scotti, P. S.**, Dowd, E. W., & Golomb, J. D. (2021). Neural representations of task-relevant and task-irrelevant features of attended objects. *bioRxiv*. doi.org/10.1101/2021.05.21.445168
10. **Scotti, P. S.**, Hong, Y., Leber, A. B., & Golomb, J. D. (2021). Visual working memory items drift apart due to active, not passive, maintenance. *Journal of Experimental Psychology: General*. doi.org/10.1037/xge0000890
11. **Scotti, P. S.**, Hong, Y., Golomb, J. D., & Leber, A. B. (2021). Statistical regularities as a reference point for memory distortions: Swap and shift errors. *Attention, Perception, & Psychophysics*, 1-21. doi.org/10.3758/s13414-020-02236-3
12. **Scotti, P. S.**, Kulkarni, A., Mazor, M., Klapwijk, E., Yarkoni, T., Huth, A. G. (2020). EduCortex: browser-based 3D brain

- visualization of fMRI meta-analysis maps. *Journal of Open Source Education*, 3(26), 75. doi.org/10.21105/jose.00075
13. **Scotti, P. S.**, Janakiefski, L., & Maxcey, A. M. (2020). Recognition-induced forgetting of schematically related pictures. *Psychonomic Bulletin & Review*, 27, 357–365. doi.org/10.3758/s13423-019-01693-8
 14. **Scotti, P. S.**, Collegio, A., & Shomstein, S. (2019). Object-based attention is resilient to low-level (boundary) or high-level (semantic) disturbances, but not both. *PsyArXiv*. doi.org/10.31234/osf.io/yxqju
 15. Collegio, A., Nah, J., **Scotti, P. S.**, & Shomstein, S. (2019). Attention scales according to inferred real-world object size. *Nature Human Behavior*, 3(1), 40-47. doi.org/10.1038/s41562-018-0485-2

SCHOLARSHIPS, FELLOWSHIPS, & AWARDS

• NSF Graduate Research Fellowship (\$102,000)	2019-2022
• CCBBI Student Neuroimaging Research Award (\$3000)	2018
• OSU University Fellowship (\$26,316)	2017
• GW CCAS Distinguished Scholar	2017
• Luther Rice Undergraduate Research Fellowship (\$5000)	2016
• Sigelman Undergraduate Research Enhancement Award (\$500)	2016
• GW Presidential Academic Scholarship Recipient	2013

TALK / POSTER PRESENTATIONS (talks/workshops marked with *)

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1. **Scotti, P. S.**, Hennings, A. C., Wallace, G., Polcyn, S., Brooks, P. P., Mennen, A., Zhao, K., Michelmann, S., Li, K., Turk-Browne, N. B., Cohen, J. D., Norman, K. A. (2023). Cloud-based Software Framework to Simplify and Standardize Real-time fMRI. *BRAIN Initiative*. Bethesda, MD.
 2. ***Scotti, P. S.**, Hennings, A. C., Norman, K. A.. Conducting RT-fMRI Studies with the Realtime fMRI Cloud Framework (RT-Cloud). *Real-Time Functional Imaging and Neurofeedback Meeting*. New Haven, CT.
 3. Wallace, G., **Scotti, P. S.**, Polcyn, S., Brooks, P. P., Mennen, A., Zhao, K., Michelmann, S., Li, K., Turk-Browne, N. B., Cohen, J. D., Norman, K. A. (2022). Cloud-based Software Framework to Simplify and Standardize Real-time fMRI. *BRAIN Initiative*. Virtual conference.
 4. **Scotti, P. S.**, Chen, J., & Golomb, J. D. (2022, May). An enhanced inverted encoding model for neural reconstructions of visual perception, attention, and memory. *Vision Sciences Society*. Virtual conference.
 5. **Scotti, P. S.**, Chen, J., & Golomb, J. D. (2021, June). An improved method for evaluating inverted encoding models. *Visual Working Memory Symposium*. Virtual conference.
 6. **Scotti, P. S.**, Chen, J., & Golomb, J. D. (2021, May). An improved method for evaluating inverted encoding models. *Vision Sciences Society*. Virtual conference.
 7. Chen, J., **Scotti, P. S.**, Dowd, E. W., & Golomb, J. D. (2021, May). Neural representations of task-relevant and task-irrelevant features of attended objects. *Vision Sciences Society*. Virtual conference.
 8. **Scotti, P. S.**, Chen, J., & Golomb, J. D. (2021, March). An improved method for evaluating inverted encoding models. *Cognitive Neuroscience Society*. Virtual conference.
 9. Jones, C. M., **Scotti, P. S.**, & Golomb, J. D. (2020, May). Feature-binding errors during saccadic remapping may affect perception of real-world objects. *Vision Sciences Society*. Virtual conference.
 10. **Scotti, P. S.**, Kulkarni, A., Mazor, M., Klapwijk, E., Yarkoni, T., Huth, A. G. (2019, December). EduCortex: browser-based 3D brain visualization of fMRI meta-analysis maps. **Awarded best poster**, *Center for Cognitive and Behavioral Brain Imaging Annual Research Days*, Columbus, OH.
 11. ***Scotti, P. S.**, Hong, Y., Leber, A., B., & Golomb, J. D. (2019, November). Competition between similar visual working memory items underlies repulsion effects. *Object Perception, Attention, and Memory (OPAM)*, Montreal, Quebec.
 12. **Scotti, P. S.**, Janakiefski, L., & Maxcey, A. M. (2019, November). Recognition-Induced Forgetting Does Not Operate Over Superordinate Categories. *Psychonomic Society*, Montreal, Quebec.
 13. **Scotti, P. S.**, Hong, Y., Leber, A., B., & Golomb, J. D. (2019, October). Competition Between Similar Visual Working Memory Items Produces Repulsion Effects. *Society for Neuroscience*, Chicago, IL.
 14. **Scotti, P. S.**, Hong, Y., Golomb, J. D., Leber, A., B. (2019, May). Relational interactions between visual memory representations increase with maintenance duration. *Vision Sciences Society*, St. Pete Beach, FL.
 15. Babu, A., **Scotti, P. S.**, Golomb, J. D. (2019, May). The dominance of spatial information in location judgments: A persistent congruency bias even amidst conflicting statistical regularities. *Vision Sciences Society*, St. Pete Beach, FL.
 16. Janakiefski, L., Smerdell, M., **Scotti, P. S.**, Maxcey, A. (2019, March). Does recognition-induced forgetting operate over temporally-grouped objects? *CogFest*, Columbus, OH.
 17. **Scotti, P. S.**, Hong, Y., Golomb, J. D., Leber, A., B. (2018, November). Statistical regularities during object encoding distort long-term memory. **Awarded best poster (\$200)**, *Object Perception, Attention, and Memory (OPAM)*, New Orleans, LA.
 18. **Scotti, P. S.**, Hong, Y., Golomb, J. D., Leber, A., B. (2018, September). Statistical regularities during object encoding distort long-term memory. *Center for Cognitive and Brain Sciences Fall Retreat*, Mt. Sterling, OH.
 19. **Scotti, P. S.**, Hong, Y., Golomb, J. D., Leber, A., B. (2018, May). Statistical regularities during object encoding distort long-term memory. *Vision Sciences Society*, St. Pete Beach, FL.
 20. Adamo, S., Nah, J., Collegio, A., **Scotti, P. S.**, Shomstein, S. (2018, May). The flux capacitor account: A new theoretical account of multiple target visual search errors. *Vision Sciences Society*, St. Pete Beach, FL.
 21. *Collegio, A., Nah, J., **Scotti, P. S.**, Shomstein, S. (2017, November). Real-world object size affects attentional allocation. *Object Perception, Attention,*

and Memory (OPAM), Vancouver, BC.

22. **Scotti, P. S.**, Collegio, A., & Shomstein, S. (2017, November). Task-irrelevant object category guides attentional allocation. *Object Perception, Attention, and Memory (OPAM)*, Vancouver, BC.
23. **Scotti, P. S.**, Adamo, S., Mitroff, S., Shomstein, S. (2017, May). Repetition priming preferentially benefits infrequent targets. *Vision Sciences Society*, St. Pete Beach, FL.
24. Adamo, S., Nah, J., Collegio, A., **Scotti, P. S.**, Shomstein, S. (2017, May). Does orientation matter? Same or differently oriented targets in a multiple target search. *Vision Sciences Society*, St. Pete Beach, FL.
25. Collegio, A., Nah, J., **Scotti, P. S.**, Shomstein, S. (2017, May). Real-world object size affects attentional allocation. *Vision Sciences Society*, St. Pete Beach, FL.
26. **Scotti, P. S.**, Adamo, S., Mitroff, S., Shomstein, S. (2017, April). Repetition priming preferentially benefits infrequent targets. **1st place Psychology poster**, *GW Research Days event*, Washington, D.C.
27. **Scotti, P. S.**, Malcolm, G.L., Peterson, M., & Shomstein, S. (2016, November). Reality vs. Simplicity: The effects of real-world objects on attentional selection. *Object Perception, Attention, and Memory (OPAM)*, Boston, MA.
28. **Scotti, P. S.**, Malcolm, G.L., Peterson, M., & Shomstein, S. (2016, May). Reality vs. Simplicity: The effects of real-world objects on attentional selection. *Vision Sciences Society*, St. Pete Beach, FL.

SKILLS

- Python, MATLAB, R
- Neural networks (PyTorch) and encoding/decoding models
- fMRI (designing experiments, collecting data, pre-/post-processing; SPM, Nipype, Freesurfer, Fmriprep)
- Supercomputing / cloud computing (Amazon Web Services, Microsoft Azure, Slurm HPCs)
- Hierarchical Bayesian modeling (PyMC3, JAGS)
- HTML / CSS / JavaScript / Node.js (experience building Amazon Mechanical Turk experiments)
- Eye-tracking (experience using/designing experiments for EyeLink 1000 Plus)

MENTORSHIP

Atmadeep Banerjee, Stepan Shabalin, David Weisberg, Foyez Alauddin, Nathalie Verlinde, Anisha Babu, Molly McKinney

AD HOC REVIEWING

Nature Neuroscience; Scientific Reports; Psychonomic Bulletin & Review; Journal of Experimental Psychology: General; Journal of Experimental Psychology: Learning, Memory, and Cognition; Attention, Perception, & Psychophysics; Memory; Memory & Cognition; Journal of Open Source Education

PROFESSIONAL DEVELOPMENT / TEACHING

- MedARC, Neuroimaging & AI project lead 2023 –
Leading neuroimaging open research projects, mentoring international online community of volunteers
- OnNeuro, Founder 2017 – 2022
Hosting/sharing open-access research talks in the fields of psychology and neuroscience
- Center for Cognitive and Behavioral Brain Imaging Student Org, Technical Director 2017 – 2022
Organizing interdisciplinary workshops and guest speaker presentations at Ohio State Univ.
- Center for Cognitive and Brain Sciences Undergraduate Summer Institute (CUSI) 2018/2019/2021
Lectured on lab organization, questionable research practices, open science, and pre-registration
- NeuroHackademy Summer 2019
Led a team of researchers to create [EduCortex](#), an educational brain viewer
- Guest Lecturer (Ohio State University) Fall 2019
Introduction to Psychology (PSYCH 1001)
- Course Assistant (Ohio State University)
Sensation and Perception (PSYCH 3310) Spring 2019
Cognitive Psychology Laboratory (PSYCH 4510) 2018 – 2019
Introduction to Social Psychology (PSYCH 3325) Autumn 2018