ARI E. KAHN

(925) · 285 · 9061 ◇ arik@princeton.edu
Princeton Neuroscience Institute ◇ Princeton, NJ 08544
github: ariekahn ◇ linkedin: ari-kahn ◇ website: www.aekahn.com

prepared: September 21, 2024

EDUCATION

Princeton Neuroscience Institute — *2020–Current*
Postdoctoral Researcher — Princeton, NJ
Advisor: Nathaniel D. Daw, Ph.D.

University of Pennsylvania — *2013–2020*
Ph.D. in Neuroscience — Philadelphia, PA
Advisor: Danielle S. Bassett, Ph.D.
Thesis: Behavioral and Neural Correlates of Graph Learning

Washington University in St. Louis — *2007–2011*
B.S. in Computer Science & Chinese — St. Louis, MO
Minor in Physics
Graduated with Engineering Honors, Cum Laude

RESEARCH EXPERIENCE

Tel Aviv University — *2012*
Research Assistant — Tel Aviv, Israel
Advisor: Matti Mintz, Ph.D.
Computational modeling of the cerebellar microcircuit for sequential learning

Tel Aviv University — *Winter 2011*
Research Assistant — Tel Aviv, Israel
Advisor: Ehud Gazit, Ph.D.
Implemented and refined a protocol for self-assembling nanospheres

Technion University — *Summer 2010*
Research Assistant — Haifa, Israel
Advisor: Nahum Shimkin, Ph.D.
Implemented a machine learning based multilayer flight simulator framework

Washington University in St. Louis — *2008–2009*
Research Assistant — St. Louis, MO
Advisor: William Smart, Ph.D.
Designed framework for BCI-based control of simulated robotic prostheses

PUBLICATIONS

Sophie Loman, Lorenzo Caciagli, **Ari E. Kahn**, Karol P. Szymula, Nathaniel Nyema, and Dani S. Bassett (2024). "Time-Resolved Functional Connectivity during Visuomotor Graph Learning". In: *bioRxiv : the preprint server for biology.* bioRxiv: `https://www.biorxiv.org/content/10.1101/2024.07.04.602005v1`.

Xiaohuan Xia, Andrei A. Klishin, Jennifer Stiso, Christopher W. Lynn, **Ari E. Kahn**, Lorenzo Caciagli, and Dani S. Bassett (2024). "Human Learning of Hierarchical Graphs". In: *Physical Review E* 109.4, p. 044305.

Ari E. Kahn and Nathaniel D. Daw (2023). "Humans Rationally Balance Mental Simulation and Temporally Abstract World Models". In: *Nature Communications Psychology*. Accepted.

Ari E. Kahn, Karol Szymula, Sophie E. Loman, Edda B. Haggerty, Nathaniel Nyema, Geoffrey K. Aguirre, and Dani S. Bassett (2023). "Network Structure Influences the Strength of Learned Neural Representations". In: *Nature Communications*. Accepted.

Timothy A. Krausz, Alison E. Comrie, **Ari E. Kahn**, Loren M. Frank, Nathaniel D. Daw, and Joshua D. Berke (2023). "Dual Credit Assignment Processes Underlie Dopamine Signals in a Complex Spatial Environment". In: *Neuron* 111.21, 3465–3478.e7. pmid: `37611585`.

Arun S. Mahadevan, Eli J. Cornblath, David M. Lydon-Staley, Dale Zhou, Linden Parkes, Bart Larsen, Azeez Adebimpe, **Ari E. Kahn**, Ruben C. Gur, Raquel E. Gur, Theodore D. Satterthwaite, Daniel H. Wolf, and Dani S. Bassett (2023). "Alprazolam Modulates Persistence Energy during Emotion Processing in First-Degree Relatives of Individuals with Schizophrenia: A Network Control Study". In: *Molecular Psychiatry*, pp. 1–10.

Marie-Constance Corsi, Pierpaolo Sorrentino, Denis Schwartz, Nathalie George, Laurent Hugueville, **Ari E. Kahn**, Sophie Dupont, Danielle S. Bassett, Viktor Jirsa, and Fabrizio De Vico Fallani (2022). "Measuring Brain Critical Dynamics to Inform Brain-Computer Interfaces". In: *bioRxiv : the preprint server for biology*. eprint: `https://www.biorxiv.org/content/early/2022/06/17/2022.06.14.495887.full.pdf`.

Jennifer Stiso, Christopher W. Lynn, **Ari E. Kahn**, Vinitha Rangarajan, Karol P. Szymula, Ryan Archer, Andrew Revell, Joel M. Stein, Brian Litt, Kathryn A. Davis, Timothy H. Lucas, and Dani S. Bassett (2022). "Neurophysiological Evidence for Cognitive Map Formation during Sequence Learning". In: *eNeuro* 9.2, ENEURO.0361–21.2022. pmid: `35105662`.

Marie-Constance Corsi, Mario Chavez, Denis Schwartz, Nathalie George, Laurent Hugueville, **Ari E. Kahn**, Sophie Dupont, Danielle S. Bassett, and Fabrizio De Vico Fallani (2021). "BCI Learning Induces Core-Periphery Reorganization in M/EEG Multiplex Brain Networks". In: *Journal of Neural Engineering*.

Marie-Constance Corsi, Mario Chavez, Denis Schwartz, Nathalie George, Laurent Hugueville, **Ari E. Kahn**, Sophie Dupont, Danielle S. Bassett, and Fabrizio De Vico Fallani (2020). "Functional Disconnection of Associative Cortical Areas Predicts Performance during BCI Training". In: *NeuroImage*, p. 116500.

Teresa M. Karrer, Jason Z. Kim, Jennifer Stiso, **Ari E. Kahn**, Fabio Pasqualetti, Ute Habel, and Danielle S. Bassett (2020). "A Practical Guide to Methodological Considerations in the Controllability of Structural Brain Networks". In: *Journal of Neural Engineering* 17.2, p. 026031.

Christopher W. Lynn, **Ari E. Kahn**, Nathaniel Nyema, and Danielle S. Bassett (2020). "Abstract Representations of Events Arise from Mental Errors in Learning and Memory". In: *Nature Communications* 11.1 (1), p. 2313.

Christopher W. Lynn, Lia Papadopoulos, **Ari E. Kahn**, and Danielle S. Bassett (2020). "Human Information Processing in Complex Networks". In: *Nature Physics*, pp. 1–9.

Steven H. Tompson, **Ari E. Kahn**, Emily B. Falk, Jean M. Vettel, and Danielle S. Bassett (2020). "Functional Brain Network Architecture Supporting the Learning of Social Networks in Humans". In: *NeuroImage*, p. 116498.

Richard F. Betzel, John D. Medaglia, **Ari E. Kahn**, Jonathan Soffer, Daniel R. Schonhaut, and Danielle S. Bassett (2019). "Structural, Geometric and Genetic Factors Predict Interregional Brain Connectivity Patterns Probed by Electrocorticography". In: *Nature Biomedical Engineering* 3.11, pp. 902–916.

Elisabeth A. Karuza, **Ari E. Kahn**, and Danielle S. Bassett (2019). "Human Sensitivity to Community Structure Is Robust to Topological Variation". In: *Complexity* 2019, pp. 1–8.

Ankit N. Khambhati, **Ari E. Kahn**, Julia Costantini, Youssef Ezzyat, Ethan A. Solomon, Robert E. Gross, Barbara C. Jobst, Sameer A. Sheth, Kareem A. Zaghloul, Gregory Worrell, Sarah Seger, Bradley C. Lega, Shennan Weiss, Michael R. Sperling, Richard Gorniak, Sandhitsu R. Das, Joel M. Stein, Daniel S. Rizzuto, Michael J. Kahana, Timothy H. Lucas, Kathryn A. Davis, Joseph I. Tracy, and Danielle S. Bassett (2019). "Functional Control of Electrophysiological Network Architecture Using Direct Neurostimulation in Humans". In: *Network Neuroscience*, pp. 1–30.

Jennifer Stiso, Ankit N. Khambhati, Tommaso Menara, **Ari E. Kahn**, Joel M. Stein, Sandihitsu R. Das, Richard Gorniak, Joseph Tracy, Brian Litt, Kathryn A. Davis, Fabio Pasqualetti, Timothy H. Lucas, and Danielle S. Bassett (2019). "White Matter Network Architecture Guides Direct Electrical Stimulation through Optimal State Transitions". In: *Cell Reports* 28.10, 2554–2566.e7.

Steven H. Tompson, **Ari E. Kahn**, Emily B. Falk, Jean M. Vettel, and Danielle S. Bassett (2019). "Individual Differences in Learning Social and Nonsocial Network Structures". In: *Journal of Experimental Psychology: Learning, Memory, and Cognition* 45.2, pp. 253–271.

Ari E. Kahn, Elisabeth A. Karuza, Jean M. Vettel, and Danielle S. Bassett (2018). "Network Constraints on Learnability of Probabilistic Motor Sequences". In: *Nature Human Behaviour* 2.12, pp. 936–947.

Jason Z. Kim, Jonathan M. Soffer, **Ari E. Kahn**, Jean M. Vettel, Fabio Pasqualetti, and Danielle S. Bassett (2018). "Role of Graph Architecture in Controlling Dynamical Networks with Applications to Neural Systems". In: *Nature Physics* 14.1, pp. 91–98.

Ann E. Sizemore, Chad Giusti, **Ari Kahn**, Jean M. Vettel, Richard F. Betzel, and Danielle S. Bassett (2018). "Cliques and Cavities in the Human Connectome". In: *Journal of Computational Neuroscience* 44.1, pp. 115–145.

Graham L. Baum, Rastko Ciric, David R. Roalf, Richard F. Betzel, Tyler M. Moore, Russell T. Shinohara, **Ari E. Kahn**, Simon N. Vandekar, Petra E. Rupert, Megan Quarmley, Philip A. Cook, Mark A. Elliott, Kosha Ruparel, Raquel E. Gur, Ruben C. Gur, Danielle S. Bassett, and Theodore D. Satterthwaite (2017). "Modular Segregation of Structural Brain Networks Supports the Development of Executive Function in Youth". In: *Current Biology* 27.11, 1561–1572.e8. pmid: 28552358.

Ari E. Kahn, Marcelo G. Mattar, Jean M. Vettel, Nicholas F. Wymbs, Scott T. Grafton, and Danielle S. Bassett (2017). "Structural Pathways Supporting Swift Acquisition of New Visuomotor Skills". In: *Cerebral Cortex* 27.1, pp. 173–184.

Elisabeth A. Karuza, **Ari E. Kahn**, Sharon L. Thompson-Schill, and Danielle S. Bassett (2017). "Process Reveals Structure: How a Network Is Traversed Mediates Expectations about Its Architecture". In: *Scientific Reports* 7.1, p. 12733.

Evelyn Tang, Chad Giusti, Graham L. Baum, Shi Gu, Eli Pollock, **Ari E. Kahn**, David R. Roalf, Tyler M. Moore, Kosha Ruparel, Ruben C. Gur, Raquel E. Gur, Theodore D. Satterthwaite, and Danielle S. Bassett (2017). "Developmental Increases in White Matter Network Controllability Support a Growing Diversity of Brain Dynamics". In: *Nature Communications* 8.1, p. 1252.

Shi Gu, Fabio Pasqualetti, Matthew Cieslak, Qawi K. Telesford, Alfred B. Yu, **Ari E. Kahn**, John D. Medaglia, Jean M. Vettel, Michael B. Miller, Scott T. Grafton, and Danielle S. Bassett (2015). "Controllability of Structural Brain Networks". In: *Nature Communications* 6, p. 8414.

TALKS

Interdisciplinary Advances in Statistical Learning. June 27–29, 2019, San Sebastian, Spain.

CompleNet. March 4–8, 2018, Boston, Massachusetts, USA.

SIAM Workshop on Network Science. July 12–13, 2018, Portland, Oregon, USA.

POSTERS

Cognitive Computataional Neuroscience. August 6–9, 2024, Cambridge, Massachusetts, USA.

Cognitive Computataional Neuroscience. August 25–28, 2022, San Francisco, California, USA.

PNI Retreat. May 2–3, 2022, Vernon Township, New Jersey, USA.

Interdisciplinary Advances in Statistical Learning. June 27–29, 2019, San Sebastian, Spain.

Sackler Colloquium "Brain Produces Mind by Modeling". May 1–3, 2019, Irvine, California, USA.

MINS Symposium. April 3, 2019, Philadelphia, Pennsylvania, USA.

Conference on Computataional Neuroscience. September 5–8, 2018, Philadelphia, Pennsylvania, USA.

Psychonomics. November 17–20, 2016, Boston, Massachusetts, USA.

Society for Neuroscience. November 12–16, 2016, San Deigo, California, USA.

Society for Neuroscience. October 13–17, 2012, New Orleans, Louisiana, USA.

AWARDS

Sackler Colloquium "Brain Produces Mind by Modeling" Travel Award   *Spring 2019*

SIAM Student Travel Award   *Spring 2018*

Jameson-Hurvich Travel Award   *Fall 2016*

TEACHING AND MENTORING

Teaching Assistant
Introduction to Brain and Behavior   *Spring 2016*
Led weekly undergraduate recitation section and wrote testing material

Undergraduate Mentoring
Nathaniel Nyema   *2018 – 2020*
Mentoring on behavioral experiments and data analysis

OUTREACH

Upward Bound
Summer Neuroscience Elective
Head Coordinator   *2016–2018*
Instructor   *2014–2015*

Penn Neuroscience Public Lecture Series
Committee Member   *2014–2017*

Neuroscience Elementary School Outreach Program
Instructor   *2013–2017*

PROFESSIONAL AFFILIATIONS

Society for Neuroscience

SIAM

SKILLS

Programming	Python, R, Matlab, JavaScript, C, C++, Julia, LaTeX
Image Processing	FSL, ANTs, FreeSurfer, DSI Studio, Nipype