# 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: August 3, 2022

## 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.

**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

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.*

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 Danielle S. Bassett (2021). "Alprazolam Modulates Persistence Energy during Emotion Processing in First-Degree Relatives of Individuals with Schizophrenia: A Network Control Study". In: *bioRxiv : the preprint server for biology.* eprint: `https://www.biorxiv.org/content/early/2021/04/23/2021.04.22.440935.full.pdf`.

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

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*

## 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++, LaTeX |
| **Image Processing** | FSL, ANTs, FreeSurfer, DSI Studio, Nipype |