

# ARI E. KAHN

(925) · 285 · 9061 ◇ arikahn@seas.upenn.edu

210 S. 33rd St. ◇ Philadelphia, PA 19104

github: ariekahn ◇ linkedin: ari-kahn ◇ website: www.aekahn.com

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## EDUCATION

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### University of Pennsylvania

Ph.D. Candidate, Neuroscience

Advisor: Danielle S. Bassett, Ph.D.

Expected Date of Completion: Fall 2019

*2013–Current*  
Philadelphia, PA

### Washington University in St. Louis

B.S. in Computer Science & Chinese

Minor in Physics

Graduated with Engineering Honors, Cum Laude

*2007–2011*  
St. Louis, MO

## RESEARCH EXPERIENCE

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### Tel Aviv University

Research Assistant

Advisor: Matti Mintz, Ph.D.

Computational modeling of the cerebellar microcircuit for sequential learning

*2012*  
Tel Aviv, Israel

### Tel Aviv University

Research Assistant

Advisor: Ehud Gazit, Ph.D.

Implemented and refined a protocol for self-assembling nanospheres

*Winter 2011*  
Tel Aviv, Israel

### Technion University

Research Assistant

Advisor: Nahum Shimkin, Ph.D.

Implemented a machine learning based multilayer flight simulator framework

*Summer 2010*  
Haifa, Israel

### Washington University in St. Louis

Research Assistant

Advisor: William Smart, Ph.D.

Designed framework for BCI-based control of simulated robotic prostheses

*2008–2009*  
St. Louis, MO

## PUBLICATIONS

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Richard F. Betzel, John D. Medaglia, **Ari E. Kahn**, Jonathan Soffer, Daniel R. Schonhaut, and Danielle S. Bassett (2019). “Inter-Regional ECoG Correlations Predicted by Communication Dynamics, Geometry, and Correlated Gene Expression”. In: *Nature Biomedical Engineering*, In Press.

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.

Steven Tompson, **Ari E. Kahn**, Emily Falk, Jean M. Vettel, and Danielle S. Bassett (2019). “Functional Brain Network Architecture Supporting the Learning of Social Networks in Humans”. In: PsyArXiv: r46gj.

**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*. arXiv: 1709.03000.

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.

Christopher W. Lynn, **Ari E. Kahn**, and Danielle S. Bassett (2018). “Structure from Noise: Mental Errors Yield Abstract Representations of Events”. In: arXiv: 1805.12491 [physics, q-bio].

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.

Steven H. Tompson, **Ari E. Kahn**, Emily B. Falk, Jean M. Vettel, and Danielle S. Bassett (2018). “Individual Differences in Learning Social and Nonsocial Network Structures”. In: *Journal of Experimental Psychology. Learning, Memory, and Cognition*. PMID: 30024255.

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

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### Network Constraints on Learnability of Probabilistic Motor Sequences

**Ari E. Kahn**, Elisabeth A. Karuza, Jean M. Vettel, Danielle S. Bassett. CompleNet. March 4–8, 2018, Boston, Massachusetts, USA.

### Network Constraints on Learnability of Probabilistic Motor Sequences

**Ari E. Kahn**, Elisabeth A. Karuza, Jean M. Vettel, Danielle S. Bassett. SIAM Workshop on Network Science. July 12–13, 2018, Portland, Oregon, USA.

## POSTERS

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### Network Constraints on Learnability of Probabilistic Motor Sequences

**Ari E. Kahn**, Elisabeth A. Karuza, Jean M. Vettel, Danielle S. Bassett. Conference on Computational Neuroscience. September 5–8, 2018, Philadelphia, Pennsylvania, USA.

### Beyond graph topology: Walk structure influences cluster-level surprisal effects in an on-line learning task

Elisabeth A. Karuza, **Ari E. Kahn**, Sharon L. Thompson-Schill, Danielle S. Bassett. Psychonomics. November 17–20, 2016, Boston, Massachusetts, USA.

## **Structural Correlates of Individual Differences in Motor Sequence Learning**

**Ari E. Kahn**, Marcelo G. Mattar, Jean M. Vettel, Nicholas F. Wymbs, Scott T. Grafton, Danielle S. Bassett. Society for Neuroscience. November 12–16, 2016, San Deigo, California, USA.

## **A model of sequential learning in the cerebellum**

**Ari E. Kahn**, Ari Magal, Roni Hogri and Matti Mintz. Society for Neuroscience. October 13–17, 2012, New Orleans, Louisiana, USA.

## **AWARDS**

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**SIAM Student Travel Award**

*Spring 2018*

**Jameson-Hurvich Travel Award**

*Fall 2016*

## **TEACHING AND MENTORING**

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### **Teaching Assistant**

Introduction to Brain and Behavior

*Spring 2016*

*Led weekly undergraduate recitation section and wrote testing material*

## **OUTREACH**

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### **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**

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Society for Neuroscience

SIAM

## **SKILLS**

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### **Programming**

Python, R, Matlab, JavaScript, C, C++, LaTeX

### **Image Processing**

FSL, ANTs, FreeSurfer, DTI Studio