

# ARI E. KAHN

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prepared: March 6, 2019

## EDUCATION

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### University of Pennsylvania

Ph.D. Candidate, Neuroscience

Advisor: Danielle S. Bassett, Ph.D.

Expected Date of Completion: Spring 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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### Inter-regional ECoG correlations predicted by communication dynamics, geometry, and correlated gene expression

Richard F. Betzel, John D. Medaglia, **Ari E. Kahn**, Jonathan Soffer, Daniel R. Schonhaut, and Danielle S. Bassett. In: Nature Biomedical Engineering. In Press. (2019).

**Human Sensitivity to Community Structure Is Robust to Topological Variation** Elisabeth A. Karuza, **Ari E. Kahn**, and Danielle S. Bassett. In: Complexity, vol. 2019, Article ID 8379321 (2019).

### Network constraints on learnability of probabilistic motor sequences

**Ari E. Kahn**, Elisabeth A. Karuza, Jean M. Vettel, and Danielle S. Bassett. In: Nature Human Behavior 2, pp. 936–947 (2018).

### Structure from noise: Mental errors yield abstract representations of events

Chris W. Lynn, **Ari E. Kahn**, and Danielle S. Bassett. In: arXiv (2018).

### **Modular Segregation of Structural Brain Networks Supports the Development of Executive Function in Youth**

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. In: *Current Biology* 27.11, p. 1561 (2017).

### **Structural Pathways Supporting Swift Acquisition of New Visuomotor Skills**

**Ari E. Kahn**, Marcelo G. Mattar, Jean M. Vettel, Nicholas F. Wymbs, Scott T. Grafton, and Danielle S. Bassett. In: *Cerebral Cortex* 27.1, pp. 173–184 (2017).

### **Process reveals structure: How a network is traversed mediates expectations about its architecture**

Elisabeth A. Karuza, **Ari E. Kahn**, Sharon L. Thompson-Schill, and Danielle S. Bassett. In: *Scientific Reports* 7.1, p. 12733 (2017).

### **Role of graph architecture in controlling dynamical networks with applications to neural systems**

Jason Z. Kim, Jonathan M. Soffer, **Ari E. Kahn**, Jean M. Vettel, Fabio Pasqualetti, and Danielle S. Bassett. In: *Nature Physics* (2017).

### **Cliques and cavities in the human connectome**

Ann E. Sizemore, Chad Giusti, **Ari Kahn**, Jean M. Vettel, Richard F. Betzel, and Danielle S. Bassett. In: *Journal of Computational Neuroscience*, pp. 1–31 (2017).

### **Individual Differences in Learning Social and Non-Social Network Structures**

Steven H. Tompson, **Ari E. Kahn**, Emily B. Falk, Jean M. Vettel, and Danielle S. Bassett. In: *Journal of Experimental Psychology: Learning, Memory, and Cognition*. In Press. (2018)

### **Developmental increases in white matter network controllability support a growing diversity of brain dynamics**

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. In: *Nature Communications* 8.1, p. 1252 (2017).

### **Controllability of structural brain networks**

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. In: *Nature Communications* 6 (2015).

## **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