# JENNIFER STISO

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## EDUCATION

### University of Pennsylvania
June 2021
PhD Neuroscience
Philadelphia, PA

### University of California Berkeley
June 2016
BA Molecular and Cellular Biology; Cognitive Science
Berkeley, CA

## Positions

### PhD Candidate
June 2017 – Present
Complex Systems Group (Prof. Danielle Bassett)
Computational neuroscience
Philadelphia, PA

### Intern for Intelligent Systems Branch of Research and Exploratory Development
July 2020 – September 2020
Johns Hopkins University Applied Physics Lab
Computational neuroscience
Columbia, MD

### Rotation Student
Aug 2016 - June 2017
University of Pennsylvania, (PI Prof. Sharon Thompson-Schill & Prof. Timothy Lucas)
Cognitive neuroscience
Philadelphia, PA

### Undergraduate Researcher
Feb 2014 - Aug 2016
Knight Laboratory (Prof. Robert Knight) Cognitive Action Laboratory (Prof. Richard Ivry)
Cognitive neuroscience
Berkeley, CA

## SKILLS

- **Programming**: Python, R, MATLAB, Java, Latex, Javascript
- **Fields**: neuroscience, graph theory, control theory, machine learning, dynamical systems, pyschology
- **People Skills**: communication, time management, organization

## PUBLICATIONS

### Articles
Published

- **Stiso, J.**,Corsi, M.C., Vettel, J.M., Garcia, J.O., de Vico Fallani, F., Lucas, T.H. and Bassett, D. S. Learning in brain-computer interface control evidenced by joint decomposition of brain and behavior. (2020). *Journal of Neural Engineering*. doi:10.1088/1741-2552/ab9064
- Cui Z., **Stiso, J.**, Baum, G.L., Kim, J.Z., Roalf, D.R., Betzel, R.F., Gu, S., Lu, Z., Xia, C.H., Ciric, R., Moore, T.M., Shinohara, R.T., Ruparel. K., Davatzikos, C., Pasqualetti, F., Gur, R.E., Gur, R.C., Bassett, D.S., Satterthwaite, T.D. (2020). Optimization of Energy State Transition Trajectory Supports the Development of Executive Function During Youth. *eLife*, 9, e53060.
- Karrer, T.M., Kim, J.Z., **Stiso, J.**, Kahn, A.E., Pasqualetti, F., Habel, U. and Bassett, D.S. (2019). A practical guide to methodological considerations in the controllability of structural brain network. *Journal of Neural Engineering*, 17 (2), 026031.

- Stacey, W., Kramer, M., Gunnardottir, K., Gonzalez-Martinez, J.,Zaghloul, K., Inati, S., Sarma, S., **Stiso, J.**, Khambhati, A., Bassett, D.S., Smith, R., Liu, V., Lopour, B., and Staba, R. (2019). Merging ROles for Network Science in Epilepsy. *Epilepsy Research.* doi:10.1016/j.eplepsyres.2019.106255
- **Stiso, J.**, Khambhati, A. N., Menara, T., Kahn, A. E., Stein, J. M., Das, S. R., Gorniak, R., Tracy, J., Litt, B., Davis, K.A., Pasqualetti, F., Lucas, T.H., Bassett, D. S. (2019). White Matter Network Architecture Guides Direct Electrical Stimulation Through Optimal State Transitions. *Cell Reports*, 28(10), 2554-2566.
- **Stiso, J.**, Bassett, D. S. (2018). Spatial Embedding Imposes Constraints on the Network Architectures of Neural Systems.*Trends in Cognitive Science*, 22(12), 1127-1142.
- Buch, V.P., Richardson, A.G., Brandon, C., **Stiso, J.**, Khattak, M.N., Bassett, D.S., Lucas, T.H. (2018) Network brain-computer interface (nBCI): An alternative approach for cognitive prosthetics. *Frontiers in Neuroscience.* 12(790).
- Perry, A., Saunders S., **Stiso, J.**, Dewar, C., Lubell, J., Meling ,T., Endestad, T., Solbakk, A.K., & Knight, R.T. (2017). Effects of Prefrontal Cortex Damage on Action and Emotion Understanding: EEG and behavioral evidence. *Brain*, 140(4), 1086–1099.
- Perry, A., **Stiso, J.**, Chang, E. F., Lin, J. J., Parvizi, J., & Knight, R. T. (2017). Mirroring in the Human Brain: Deciphering the Spatial-Temporal Patterns of the Human Mirror Neuron System. *Cerebral Cortex*, 1–10.
- **Stiso, J.**, & Perry, A. (2016). How Do We Understand Other People? *Frontiers for Young Minds*, 4(September).

Under Review

- Scheid, B. H., Ashourvan, A., **Stiso, J.**, Davis, K.A., Mikhail, F., Pasqualetti, F., Litt, B., Bassett, D.S. (2020). Time-evolving controllability of effective connectivity networks during seizure progression. *PNAS*

## Book Chapters

- Bassett, D.S., **Stiso, J.** Spatial Brain Networks. Invited as a chapter in the volume entitled "Spatial Networks" from Comptes-rendus Academie des sciences. doi:10.1016/j.crhy.2018.09.006

## Tools

- **Stiso, J.**, Schaff, M. Combating Citation Bias Chrome Extension.
- Zhou, D., Cornblath, E.J., **Stiso, J.**, Teich, E.G., Dworkin, J.D., Blevins, A.S. and Bassett, Danielle S. (2020, February 17). Gender Diversity Statement and Code Notebook v1.0 (Version v1.0). Zenodo. http://doi.org/10.5281/zenodo.3672110

## Press

- "Penn Researchers' Model Optimizes Brain Stimulation Therapies, Improving Memory in Tests". Penn Engineering Medium Article

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**Presentations**

## Invited Talks

External

- **Effects of interictal epileptiform discharges on electrocorticography-derived functional networks**. BRAIN Initiative Investigators Meeting. Virtual. 2020
- **Effects of interictal epileptiform discharges on electrocorticography-derived functional connectivity**. Women in Data Science Conference. Philadelphia, PA. 2020
- **Network Models of Brain Structure, Function, and Control**. Organization for Human Brain Mapping - data science in neuroscience symposium. Rome, Italy. 2019

- **Using Control Theory to Model Direct Electrical Brain Stimulation**. Networks in Big Data and Personalized Medicine Satellite. Paris, France. 2018
- **Network Science Approaches to Neural Function in Epilepsy**. American Epilepsy Society - Engineering and Neurostimulation Special Interest Group. New Orleans, LA. 2018
- **Large-scale Control of Human Brain Structural Networks: applications in direct electrical stimulation**. Society for Neuroscience Mini symposium - Exposing Neural Dynamics Using Real-Time Control: From Neurons to Human Behavior and Psychopathy. San Diego, CA. 2018
- **Towards a Mathematical Model of Direct Electrical Brain Stimulation**. Topology in Biology Seminar. Philadelphia, PA. 2018

Internal

- **Effects of interictal epileptiform discharges on human electrocorticography derived functional connectivity**. Neuroscience Training Grant Retreat. 2020
- **Human Learning: from network theory to neural correlates**. Neuroscience Graduate Group Recruitment. 2020
- **Barriers to Open Science in Graduate School**. Open Science Week panel. 2019
- **Investigating the Role of the Hippocampus in Higher-order Statistical Learning**. Collaborative ECoG research protocol meeting. 2019
- **Network Models of Brain Structure, Function, and Control**. Graduate Research in Progress Seminar. 2019
- **Investigating the Neurophysiological Correlates of Higher-order Statistical Learning in Humans**. CNI +/-. 2018
- **Towards a Mathematical Model of Direct Electrical Brain Stimulation**. Graduate Research in Progress Seminar. 2018

## Posters

- **Stiso, J.**, Caciagli, L., Hadar, P., Davis, K.A., Lucas, T.H., Bassett, D. S. Effects of Inter-ictal epileptiform discharges on electrocorticography based functional connectivity. Planned presentation at OHBM, Montreal (2020)
- **Stiso, J.**, Corsi, M.C., Vettel, J.M., Garcia, J.O., de Vico Fallani, F., Bassett, D. S. Dynamic functional beta-band connectivity during BCI learning drives brain activity to support sustained attention. Presented at OHBM, Rome (2019)
- He, X., **Stiso, J.**, Kim, J.Z., Lu, Z., Cornblath, E.J., Menara, T, Pasqualetti, F., Sperling, M.R., Tracy J.I., Bassett, D.S. Characterizing the optimal control energy trajectory in temporal lobe epilepsy. Presented at OHBM, Rome (2019)
- Cui Z., **Stiso, J.**, Baum, G.L., Kim, J.Z., Roalf, D.R., Betzel, R.F., Gu, S., Lu, Z., Xia, C.H., Ciric, R., Moore, T.M., Shinohara, R.T., Ruparel. K., Davatzikos, C., Pasqualetti, F., Gur, R.E., Gur, R.C., Bassett, D.S., Satterthwaite, T.D. (2018). Optimization of Energy State Transition Trajectory Supports the Development of Executive Function During Youth. Presented at OHBM, Rome (2019)
- Buch V. P., Brandon C., Archer R., **Stiso, J.**, Rammayya A., Yang A., Richardson, A. G., Bassett, D.S., Lucas, T.H. Novel inter-trial resting state network analysis can reliably predict learning and performance of a simple cognitive reaction time task. American Association of Neurological Surgeons. San Diego (2019)
- **Stiso, J.**, Khambhati, A. N., Menara, T., Kahn, A. E., Stein, J. M., Das, S. R., … Bassett, D. S. White Matter Network Architecture Guides Direct Electrical Stimulation Through Optimal State Transitions. Presented at NetSci, Paris (2018), Computational Cognitive Neuroscience, Philadelphia (2018) and Society for

Neuroscience, San Diego (2018)

- **Stiso, J.**, Hudgins E., Brandon C., Williams S., Richardson A., Kelz M., Proekt A., Lucas T. Intracranial Recordings Applied Towards a Better Predictor of Unconscious States. Presented at Congress of Neurological Surgeons (2017)
- Perry, A., Saunders S., **Stiso, J.**, Dewar, C., Lubell, J., Meling, T., Endestad, T., Solbakk, A.K., & Knight, R.T. Effects of prefrontal cortex damage on emotion understanding. Presented at CNS, San Francisco (2017)
- Perry, A., **Stiso, J.**, Dewar, C., Lin, J.J., Knight, R.T. The role of the orbitofrontal cortex in regulation of interpersonal space. Presented at SfN conference, San Diego (2016)
- Perry, A., **Stiso, J.**, Chang, E. F., Lin, J. J., Parvizi, J., & Knight, R. T. Perception through action: Where and When. Presented at the SfN conference (2015) and California Cognitive Science Conference (2016)
- Perry, A.,**Stiso, J.**, Chang, E.F., Schalk, G., Brunner, P., Lin, J.J., Knight, R.T. Viewing and Imitating Goal Directed Actions. Presented at the SfN (2014) and the California Cognitive Science conference (2015)

## Consulting

### Medical Device Startup
Aug 2019 - Jan 2020

Penn Biotech Group — Philadelphia, PA

- Quantified early adoption market and execution strategy for small health-tech startup in the Philadelphia area that specializes in neurofeedback devices.

## HONORS AND AWARDS

### Ruth L. Kirschstein National Research Service Award (NRSA F31) — 2020
University of Pennsylvania

### Blavatnik Fellowship Finalist — 2019
University of Pennsylvania

### Jameson Hurvich Travel Award — 2019
University of Pennsylvania

### Google PhD Fellowship Internal Nominee — 2018
University of Pennsylvania

### Systems and Integrative Biology T32 — 2016
University of Pennsylvania

### NSF GRFP Honorable Mention — 2016
National

### Robert J. Glushko Prize — 2015
University of California, Berkeley

### SURF L&S Fellowship — 2014
University of California, Berkeley

### Goldberg Undergraduate Research Fellowship — 2013
University of California Berkeley

## TEACHING

### Teaching Assistant
2019 - 2020

- Taught and developed material for graduate level Python bootcamp. This bootcamp also included two lessons on neural networks with Keras.
- Teaching assistant for introduction to the biological basis of behavior (BBB109) at the University of Pennsylvania.

### Guest Lecture
2019 - Present

- Taught lecture on applications of network control theory to neuroscience to graduate level network neuroscience course (BE566)
- Taught guest lecture on learning memory in high school summer neuroscience class offer through Upward Bound.

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## Community Involvement

### Outreach and Diversity
2019 - Present

Diversity and Inclusion in Science

- Led committee to diversify portraits fo scientists present in neuroscience spaces, especially those that trainees spend a substantial amount of time in.
- Curated database of black scientists in STEM as a resource for conference organizers who prioritize diversity (blackinstem.net)
- Contributed code for chrome extension (main contributor) and binder to help combat biases in citation practices.

2016 - Present

Graduate Led Initiatives and Activities

- Elected secretary in 2019.
- Elected co-director in 2018; negotiated funding increases from three different sources, totaling a 41% increase in funds.
- Elected chair of professional development in 2017; managed several subcommittees, accountable for professional development budget and introduced a new undergraduate mentor program.
- Volunteered to teach high school students neuroscience and research in general as part of Upward Bound, volunteered at the Philadelphia Science Festival.
- Developed and designed a networking website for neuroscience students and alumni from Penn.

2019 - 2020

Penn Network Visualization Organization

- Organizing committee for week long internship program for high school artists in the Philadelphia areas to learn about science and create science inspired pieces for their portfolio.

2013 - 2014

Cognitive Science Students Association

- Taught basic neuroscience to elementary school students; planned annual conference for undergraduate and graduate researchers in cognitive science.

### Professional Memberships
Present

- Penn Biotech Group (2019)
- Society for Neuroscience (2018)

- Penn Data Science Group (2017)
- Graduate Led Initiatives and Activities (2016)

## Peer Reviewer

2018 - Present

- *Journal of Nonlinear Science, NeuroImage*

## Journal Clubs

2017 - Present

- Organized the Cognitive Neuroscience and Neuroimaging journal club at Penn. This included administrative roles as well as presenting at least once per semester.

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**Coursework**

- **Math and Computer Science**: computational models of cognition, data structures, data science, discrete mathematics, linear algebra, machine learning (including neural networks), statistics
- **Biology and Social Science**: biochemistry, biophysics, electricity and magnetism, genetics, linguistics, organic chemistry, perception, philosophy of mind, neurobiology, and neuropsychology