JENNIFER STISO

jeni.stiso@gmail.com – github.com/jastiso – jenniferstiso.com – Philadelphia, PA

EDUCATION

University of Pennsylvania
January 2021
PhD Neuroscience
Philadelphia, PA

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

Positions

Research Engineer
Jan 2021 – Present
Complex Systems Group (Prof. Danielle Bassett)
Computational neuroscience
Philadelphia, PA

PhD Candidate
June 2017 – Jan 2021
Complex Systems Group (Prof. Danielle Bassett)
Computational neuroscience
Philadelphia, PA

Intern for Intelligent Systems Branch of Research and Exploratory Development
July 2020 – Oct 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

- Wang, X., Dworkin, J., Zhou, D., **Stiso, J.**, Falk, E., Zurn, P., Bassett, D.S., Lydon-Staley, D. (2021). Gendered Citation Practices in the Field of Communication. *Annals of the International Communication Association.*
- Matelsky, J., Reilly, E.P., Johnson, E., **Stiso, J.**, Bassett, D.S., Wester, B., & Gray-Roncal, W. (2021). DotMotif: an open-source tool for connectome subgraph isomorphism search and graph queries. *Sci Rep.* https://doi.org/10.1038/s41598-021-91025-5
- Scheid, B. H., Ashourvan, A., **Stiso, J.**, Davis, K.A., Mikhail, F., Pasqualetti, F., Litt, B., Bassett, D.S. (2021). Time-evolving controllability of effective connectivity networks during seizure progression. *PNAS*

- **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).

In Revision

- Bertolero, M.A., Dworkin, J.D., David, S., Lopez, C.L., Srivastava, P., **Stiso, J.**, Zhou, D., Dzirasa, K., Fair, D., Kasczkurkin, Marlin, B.J., Shomhamy, D., Uddin, L., Zurn, P., & Bassett, D. S. (2020). Racial imbalance in neuroscience reference lists and intersections with gender. *arXiv*.
- **Stiso, J.**, Caciagli, L., Hadar, P., Davis, K.A., Lucas, T.H., $ Bassett, D.S. (2021). Fluctuations in functional connectivity associated with interictal epileptiform discharges (IEDs) in intracranial EEG. *bioArXiv*.

Submitted

- Nozari, E., **Stiso, J.**, Caciagli, L., Cornblath, E.J., He, X., Bertolero, M.A., Mahadevan., A., Pappas, G., & Bassett, D.S. (2020). Is the brain macroscopically linear? *arXiv*.

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.**, Parkes, L. and Kim, J.Z. Network Control Python package.

- **Stiso, J.**, Schaff, M. Citation Transparency 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

---

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

- Nozari, E., **Stiso, J.**, Caciagli, L., Cornblath, E.J., He, X., Bertolero, M.A., Mahadevan., A., Pappas, G., &

Bassett, D.S. (2020). Is the brain macroscopically linear? CoSyNe, Virtual (2021)

- Tobin, M., Wood, K., **Stiso, J.**, Bassett, D.S., & Geffen, M. Role of interneurons in populations' neural coding and network properties in auditory cortex. APAN, Virtual (2020)
- **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. Presentation at OHBM, Virtual (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

Tutor 2020-2021
- Data science tutor for UPenn MindCore

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.

Community Involvement

Outreach and Diversity 2019 - Present
Diversity and Inclusion in Science
- Served as student organizer for the Innovators in Cognitive Neuroscience seminar series.
- Served advisory committee for the first annual BiasWatchNeuo conference.
- 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

- *Nature Communications, 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.

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