

gregorykiar

biomedical engineer



contact

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gkiar.me 

gkiar 
     

languages

english native speaker,
basic ASL

programming

Python, R, AWS 
MATLAB, C++, x86,
Ruby, LaTeX

soft skills

leadership, teaching,
sci. comm., design,
problem solving

education

- 2017 – now **PhD student** in Biomedical Engineering McGill University, Montreal, QC
Thesis work supervised by Alan Evans and Tristan Glatard on projects pertaining to scalable, reproducible, and accessible platforms and tools for enabling computational neuroscience. All code and data have been made publicly available.
- 2014 – 2016 **M.S.E** in Biomedical Engineering Johns Hopkins University, Baltimore, MD
Thesis work was supervised by Joshua T. Vogelstein on a project entitled: GREMLIN: Graph Estimation from MR images Leading to Inference in Neuroscience. All code and data have been made publicly available.
- 2010 – 2014 **B.Eng** in Biomedical and Electrical Engineering Carleton University, Ottawa, ON
Capstone work was supervised by Leonard MacEachern on a project entitled: Electrical muscle stimulation with concurrent EMG feedback of the upper arm for applications in stroke rehabilitation.
- 2016 **Exploring the Human Connectome** The Human Connectome Project, Boston, MA
Development and deployment of connectome estimation pipelines.
- 2015 **Presenting Data and Information** Edward Tufte, Baltimore, MD
Cultivate skills in effective communication with scientific figures.

experience

Academic Experience

Current Positions & Activities

- 05/17 – now **McGill Centre for Integrative Neuroscience (MCIN)** Montreal, QC
Software Developer
Responsible for the integration of distributed software services with high performance computing clouds. Provided development, training, and support towards the use of tools and services within international collaborations.
- 05/17 – now **Organization for Human Brain Mapping (OHBM)** Minneapolis, MN
Open Science SIG - BrainHack Co-Chair
Contribute to the organization and planning of the BrainHack 101 training course, the BrainHack hackathon, as well as unconference activities related to the open science special interest group before and throughout the annual OHBM meeting.

Previous Positions

- 09/14 – 05/17 **Center for Imaging Science, Johns Hopkins University** Baltimore, MD
Research Engineer
Development and maintenance of an open-source pipeline for structural connectome estimation in humans and implemented statistical algorithms for quality control of data derivatives. Publicly released data products to lower the barrier to entry for neuroscience research. Chiefly responsible for grant reporting and public presence at conferences and workshops.

- 06/13 – 09/13 **Dept. of Systems and Computer Engineering, Carleton University** Ottawa, ON
Research Assistant with Dr. Rafik Goubran
 Developed wireless medical data publish-subscribe system for viewing patient vital signs remotely.
- 06/12 – 09/12 **Dept. of Systems and Computer Engineering, Carleton University** Ottawa, ON
Research Assistant with Dr. Andy Adler
 Utilized neural networks for inverse modeling of real and simulated biological systems.
- 06/11 – 09/11 **Dept. of Biology, Carleton University** Ottawa, ON
Research Assistant with Dr. Jeffrey Dawson
 Developed robotics platform for studying insect locomotion patterns and behaviour.
- 01/09 – 09/09 **CRC, Ottawa Hospital Research Institute** Ottawa, ON
Research Assistant with Dr. Jim Dimitroulakos
 Tested combination therapies of Lovastatin and Cisplatin drugs on colon and breast cancer strains.

Teaching Experience

- ongoing **McGill University, OHBM, Brain Intensive, others** Montreal, QC
Neuroinformatics Instructor
 Regularly teach a series of workshop introducing neuroscientists and trainees to methods in neuroinformatics. Developed and publicly released all course content on GitHub under the "Brainhack101" moniker and several videos on YouTube under the "BrainIntensive" profile.
- 09/14 – 05/17 **Dept. of Biomedical Engineering, Johns Hopkins University** Baltimore, MD
Teaching Assistant
 Responsible for instruction, evaluation, and content design for: Freshman Modeling and Design for BME (2014, 2015), Systems and Controls (2015), Statistical Connectomics (2015), The Art of Data Science (2016), NeuroData Design (2016). Spent more than 500 hours working with students.
- 01/{15, 16, 17} **Dept. of Computer Science, Johns Hopkins University** Baltimore, MD
Instructor
 Responsible for instruction, evaluation, and content design for intensive 3-week project-based course on an introduction to connectomics research across multiple scales and experimental modalities. Spent more than 300 hours planning, designing course content, and working with students.
- 09/12 – 05/14 **Student Academic Success Center, Carleton University** Ottawa, ON
Facilitator for Peer-Assisted Study Sessions
 Instructed and demonstrated mastery of principles in electromagnetism and power engineering. Spent more than 300 hours working with students.
- 08/13 – 05/14 **Student Academic Success Center, Carleton University** Ottawa, ON
Facilitator Team Leader
 Provided training, mentoring, and coaching to student instructors in a variety of disciplines. Spent more than 100 hours training and working with facilitators.
- 01/13 – 06/14 **Dept. of Systems and Computer Engineering, Carleton University** Ottawa, ON
Teaching Assistant
 Instructed introductory level C++ programming. Led lab sessions and instructional workshops. Spent more than 300 hours working with students.

memberships & extracurriculars

2017 – now	Healthy Brains for Healthy Lives Trainee Committee President (Neuroinformatics)	Montreal, QC
2017 – now	OHBM Open Science SIG Hackathon Chair & Committee Member	Minneapolis, MN
2017 – now	INCF SIG on Brain Imaging Data Structure (BIDS) Member	Stockholm, Sweden
2014 – 2017	NeuroData Chief Neurocartographer and Core Team Member	Baltimore, MD
2015 – 2017	College Prep Program College Mentor, SAT Coach, & Essay Reviewer	Baltimore, MD
2014 – 2016	Thread Grandparent (i.e. supervisor) & Family Member (i.e. mentor)	Baltimore, MD
2013 – 2014	Carleton University Biomedical Engineering Society President	Ottawa, ON
2013 – 2014	PASS Talks Co-Founder and Vice President	Ottawa, ON
12/12, 12/13	Operation Red Nose Ottawa Navigator and Driver	Ottawa, ON
2010 – 2011	Carleton University Student Emergency Response Team Emergency First Responder	Ottawa, ON

awards

2017	Healthy Brains for Healthy Lives Doctoral Fellowship	McGill University, Montreal, QC
2017	CRN Coding Sprint Project Award	Stanford University, Palo Alto, CA
2017	OHBM BrainHack Travel Award	OHBM, Minneapolis, MN
2014 – 2016	Full-tuition Master's Degree Fellowship	Johns Hopkins University, Baltimore, MD
2014	Graduated with Distinction	Carleton University, Ottawa, ON
2014	Greatest Social Impact Paper	Professional Engineering Ontario (PEO), Ottawa, ON
2014	SEED Fund	Carleton University Engineering Alumni, Ottawa, ON
2014	IEEE Papers Showcase Local Winner	IEEE Ottawa-Carleton Chapter, Ottawa, ON
2014	Carleton Electronics Project Competition Champion	Carleton University, Ottawa, ON
2013	Engineering '65 and '66 Scholarship	Carleton University, Ottawa, ON
2012 – 2014	Dean's Honour List	Carleton University, Ottawa, ON
2012	Clarence C. Gibson Scholarship	Carleton University, Ottawa, ON

interests

professional: reproducibility, accessibility, cloud computing, neuroscience, pipeline engineering, big data, data analysis, software design, machine learning, statistics. **personal:** guitar, hockey, soccer, cooking, design, animals, hiking, paddling.

reviewed for

1. Frontiers in Neuroinformatics

publications

pre-prints

1. Organization for Human Brain Mapping Open Science Hackathons: Accessible and Inclusive Neuroinformatics
E. DuPre, **G. Kiar**, R. C. Craddock, K. J. Gorgolewski, F. Hoffstaedter, A. Keshavan, J. B. Poline, M. Visconti di Oleggio Castello, K. Whitaker, P. Bellec
(Jan. 2018). Computer Human Interaction.
2. A Comprehensive Cloud Framework for Accurate and Reliable Human Connectome Estimation and Meganalysis
G. Kiar, E. W. Bridgeford, V. Chandrashekhar, D. Mhembere, R. Burns, W. R. Gray Roncal, J. T. Vogelstein
bioRxiv (Sept. 2017). Cold Spring Harbor Laboratory.
3. Boutiques: a flexible framework for automated application integration in computing platforms
T. Glatard, **G. Kiar**, T. Aumentado-Armstrong, N. Beck, P. Bellec, R. Bernard, A. Bonnet, S. Camarasu-Pop, F. Cervenansky, S. Das, R. Ferreira da Silva, G. Flandin, P. Girard, K. J. Gorgolewski, C. R. G. Guttman, V. Hayot-Sasson, P.-O. Quirion, P. Rioux, M.-E. Rousseau, A. C. Evans
ArXiv e-prints (Nov. 2017).

articles in peer-reviewed journals

1. Science In the Cloud (SIC): A use case in MRI Connectomics
G. Kiar, K. J. Gorgolewski, D. Kleissas, W. R. Gray Roncal, B. Litt, B. Wandell, R. A. Poldrack, M. Wiener, R. J. Vogelstein, R. Burns, J. T. Vogelstein
GigaScience gix013 (Mar. 2017).
2. BIDS apps: Improving ease of use, accessibility, and reproducibility of neuroimaging data analysis methods
K. J. Gorgolewski, F. Alfaro-Almagro, T. Auer, P. Bellec, M. Capotă, M. M. Chakravarty, N. W. Churchill, A. L. Cohen, R. C. Craddock, G. A. Devenyi, A. Eklund, O. Esteban, G. Flandin, J. S. Guntupalli, M. Jenkinson, A. Keshavan, **G. Kiar**, P. R. Raamana, D. Raffelt, C. J. Steele, P. O. Quirion, R. E. Smith, S. Strother, G. Varoquaux, T. Yarkoni, Y. Wang, R. A. Poldrack
13.3 (2017) e1005209. Public Library of Science.
3. Grand Challenges for Global Brain Sciences
J. T. Vogelstein, K. Amunts, A. Andreou, D. Angelaki, G. Ascoli, C. Bargmann, R. Burns, C. Cali, F. Chance, M. Chun, G. Church, H. Cline, T. Coleman, S. de La Rochefoucauld, W. Denk, A. Belen Elogoyhen, R. E. Cummings, A. Evans, K. Harris, M. Hausser, S. Hill, S. Inverso, C. Jackson, V. Jain, R. Kass, B. Kasthuri, **G. Kiar**, K. Kording, S. Koushika, J. Krakauer, S. Landis, J. Layton, Q. Luo, A. Marblestone, D. Markowitz, J. McArthur, B. Mensh, M. Milham, P. Mitra, P. Neskovic, M. Nicolelis, R. O'Brien, A. Oliva, G. Orban, H. Peng, A. Picchini-Schaffer, M. Picciotto, J.-B. Poline, M.-m. Poo, A. Pouget, S. Raghavachari, J. Roskams, T. Sejnowski, F. Sommer, N. Spruston, L. Swanson, A. Toga, R. J. Vogelstein, R. Yuste, A. Zador, R. Haganir, M. Miller
ArXiv e-prints (Aug. 2016).

4. To the Cloud! A Grassroots Proposal to Accelerate Brain Science Discovery

J. T. Vogelstein, B. Mensh, M. Häusser, N. Spruston, A. C. Evans, K. Kording, K. Amunts, C. Ebell, J. Muller, M. Telefont, S. Hill, S. P. Koushika, C. Cali, P. A. Valdés-Sosa, P. B. Littlewood, C. Koch, S. Saalfeld, A. Kepecs, H. Peng, Y. O. Halchenko, **G. Kiar**, M. M. Poo, J. B. Poline, M. P. Milham, A. P. Schaffer, R. Gidron, H. Okano, V. D. Calhoun, M. Chun, D. M. Kleissas, R. J. Vogelstein, E. Perlman, R. Burns, R. Hugarir, M. I. Miller

Neuron 92.3 (Nov. 2016) pp. 622–627. Elsevier, requested article.

proceedings in international peer-reviewed conferences

1. Electric localization of weakly electric fish using neural networks

G. Kiar, Y. Mamatjan, J. Jun, L. Maler, A. Adler

Journal of Physics: Conference Series vol. 434 (May 2013).

book chapters

1. **G. Kiar**, C. Makowski, J. B. Poline, S. Das, A. C. Evans. “The Montreal Neurological Institute Ecosystem: Enabling Reproducible Neuroscience from Collection to Analysis in the Web”. In: Society for Neuroscience, Nov. 2017. Chap. Neuroinformatics in the Age of Big Data: Working with the Right Data and Tools, pp. 51–56.

invited talks & organized workshops

1. A Data Driven Approach for Tackling Big Data Connectomics

Feindel Brain Imaging Lecture (Feb. 2018).

2. Coding for Neuroners: An Introduction to Neuroscience Informatics

Graduate Student Association for Neuroscience (Jan. 2018).

3. BigNeuro 2017: Analyzing brain data from nano to macroscale

Neural Information Processing Systems Workshop (Dec. 2017).

4. Brain Hacking 101

Organization for Human Brain Mapping Open Science Room (June 2017).

5. Brainhack101 & Exploratory Data Analysis

Online Intensive for Brain Science: Computation and Imaging (Sept. 2017).

6. CloudControl: Integrating Quality Control and Pipeline Deployment in the Cloud

Organization for Human Brain Mapping Open Science Room (June 2017).

7. NeuroStorm: Accelerating Brain Science Discovery in the Cloud

Johns Hopkins University (June 2017).

8. Open Science Session Chair

Organization for Human Brain Mapping Open Science Room (June 2017).

9. Platforms for high performance computing in neuroscience

Neuroinformatics in the Age of Big Data: Working with the Right Data and Tools (Nov. 2017).

10. Science in the Cloud (SIC): A use-case in MRI Connectomics

Organization for Human Brain Mapping Open Science Room (June 2017).

posters at international conferences

1. BIDS apps: Improving ease of use, accessibility, and reproducibility of neuroimaging data analysis methods
K.J. Gorgolewski, F. Alfaro-Almagro, T. Auer, P. Bellec, M. Capotă, M. M. Chakravarty, N. W. Churchill, A. L. Cohen, R. C. Craddock, G. A. Devenyi, A. Eklund, O. Esteban, G. Flandin, J. S. Guntupalli, M. Jenkinson, A. Keshavan, **G. Kiar**, P. R. Raamana, D. Raffelt, C. J. Steele, P. O. Quirion, R. E. Smith, S. Strother, G. Varoquaux, T. Yarkoni, Y. Wang, R. A. Poldrack
Organization for Human Brain Mapping (June 2017).
2. MR Graph with Rich attribUTES DataBase (Mr. GruteDB)
G. Kiar, W. R. Gray Roncal, D. Mhembere, E. W. Bridgeford, S. Wang, C. E. Priebe, R. Burns, J. T. Vogelstein
Organization for Human Brain Mapping (June 2016).
3. Community Connectomics via Cloud Computing Utilizing m2g: a Reference Pipeline
G. Kiar, W. R. Gray Roncal, D. Mhembere, E. W. Bridgeford, D. Clark, M. P. Milham, R. C. Craddock, R. Burns, J. T. Vogelstein
Organization for Human Brain Mapping (June 2015).
4. The Open Connectome Project & NeuroData: Enabling Data Driven Neuroscience at Scale
Joshua T. Vogelstein, et al.
Society for Neuroscience (Oct. 2015).

published code

1. Example use case of SIC with the ndmg pipeline (SIC:ndmg)
G. Kiar, K. J. Gorgolewski, D. Kleissas, W. R. Gray Roncal, B. Litt, B. Wandell, R. A. Poldrack, M. Wiener, R. J. Vogelstein, R. Burns, J. T. Vogelstein
(2017). GigaScience Database.
2. Boutiques: A descriptive command-line framework
T. Glatard, **G. Kiar**, T. Aumentado-Armstrong, N. Beck, R. Ferreira da Silva, M. E. Rousseau
Zenodo (Sept. 2017).
3. ndmg: NeuroData's MRI Graphs pipeline
G. Kiar, W. R. Gray Roncal, D. Mhembere, E. W. Bridgeford, R. Burns, J. T. Vogelstein
Zenodo (Aug. 2016).

works in progress

1. Optimal Decisions for Discovery Science via Maximizing Discriminability: Applications in Neuroimaging
S. Wang, Z. Yang, X. N. Zuo, M. P. Milham, R. C. Craddock, **G. Kiar**, W. R. Gray Roncal, E. W. Bridgeford, Consortium of Reliability, Reproducibility (CoRR), C. E. Preibe, J. T. Vogelstein
In Preparation (2017).