

gregorykiar

biomedical engineer



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gregkiar

languages

english native speaker,
basic ASL

programming

Python, R, AWS
MATLAB, C++, x86,
LaTeX, CSS & HTML

soft skills

leadership, design,
problem solving,
teaching

education

- 2017 – now **PhD student** in Biomedical Engineering McGill University, Montreal, QC
Thesis work supervised by Alan Evans on projects pertaining to scalable, reproducible, and accessible platforms and tools for enabling computational neuroscience.
- 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.
- 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

- 05/17 – now **McGill Centre for Integrative Neuroscience (MCIN)** Montreal, QC
Software Developer
Integration of distributed software services with the AWS cloud.

Current Activities

- 05/17 – now **Organization for Human Brain Mapping (OHBM)** Minneapolis, MN
Open Science SIG - Organizer
Contributed to the organization and planning of the BrainHack 101 training course and unconference activities related to the open science special interest group 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 multi-scale brain-graph generation from human MR images. Implementation and development 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

- 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 (cumulative) 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.
- 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 **OHBM Open Science Special Interest Group (SIG)** Minneapolis, MN
 Committee Member
- 2017 – now **OHBM Student and Postdoc SIG** Minneapolis, MN
 Student Member
- 2014 – now **NeuroData** Baltimore, MD
 Chief Neurocartographer and Core Team Member

2015 – 2016	College Prep Program College Mentor, SAT Coach, & Essay Reviewer	Baltimore, MD
2014 – 2016	Thread Grandparent (i.e. supervisor) & Family Member (i.e. volunteer)	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	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: pipeline engineering, cloud computing, big data, data analysis, software design, neuroscience, machine learning, statistics, accessibility and reproducibility. **personal:** guitar, hockey, soccer, cooking, design, animals, hiking, paddling.

publications

pre-prints

1. ndmg: A Scalable, Reliable and Replicable Pipeline for Diffusion-MRI Cloudified Connectome Meganalysis
Gregory Kiar*, William R Gray Roncal*, Vikram Chandrashekhar, Eric W Bridgeford, Disa Mhembere, Randal Burns, Joshua T Vogelstein
In Preparation (2017).

articles in peer-reviewed journals

1. Science In the Cloud (SIC): A use case in MRI Connectomics
Gregory Kiar, Krzysztof J. Gorgolewski, Dean Kleissas, William Gray Roncal, Brian Litt, Brian Wandell, Russel A. Poldrack, Martin Wiener, R. Jacob Vogelstein, Randal Burns, Joshua T. Vogelstein
GigaScience gix013 (Mar. 2017).

2. BIDS apps: Improving ease of use, accessibility, and reproducibility of neuroimaging data analysis methods

Krzysztof J Gorgolewski, Fidel Alfaro-Almagro, Tibor Auer, Pierre Bellec, Mihai Capotă, M Mallar Chakravarty, Nathan W Churchill, Alexander Li Cohen, R Cameron Craddock, Gabriel A Devenyi, Anders Eklund, Oscar Esteban, Guillaume Flandin, Satrajit S Ghosh, J Swaroop Guntupalli, Mark Jenkinson, Anisha Keshavan, Gregory Kiar, et al.

PLOS Computational Biology 13.3 (Jan. 2017) e1005209. Public Library of Science.

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

Joshua T. Vogelstein, Brett Mensh, Michael Häusser, Nelson Spruston, Alan C. Evans, Konrad Kording, Katrin Amunts, Christoph Ebell, Jeff Muller, Martin Telefont, Sean Hill, Sandhya P. Koushika, Corrado Cali, Pedro Antonio Valdés-Sosa, Peter B. Littlewood, Christof Koch, Stephan Saalfeld, Adam Kepecs, Hanchuan Peng, Yaroslav O. Halchenko, Gregory Kiar, Mu-Ming Poo, Jean-Baptiste Poline, Michael P. Milham, Alyssa Picchini Schaffer, Rafi Gidron, Hideyuki Okano, Vince D. Calhoun, Miyoung Chun, Dean M. Kleissas, R. Jacob Vogelstein, Eric Perlman, Randal Burns, Richard Hugganir, Michael I. Miller

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

4. Grand Challenges for Global Brain Sciences

Joshua T Vogelstein, Katrin, Andreas Andreou, Dora Angelaki, Giorgio Ascoli, Cori Bargmann, Randal Burns, Corrado Cali, Frances Chance, Miyoung Chun, Gregory Kiar, et al.

F1000 Research (Aug. 2016).

proceedings in international peer-reviewed conferences

1. Electric localization of weakly electric fish using neural networks

Gregory Kiar, Yasin Mamatjan, James Jun, Len Maler, Andy Adler

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

posters at international conferences

1. MR Graph with Rich attribUTES DataBase (Mr. GruteDB)

Gregory Kiar, William R Gray Roncal, Disa Mhembere, Eric Bridgeford, Shangsi Wang, Carey Priebe, Randal Burns, Joshua T. Vogelstein

Organization for Human Brain Mapping (June 2016).

2. The Open Connectome Project & NeuroData: Enabling Data Driven Neuroscience at Scale

Joshua T. Vogelstein, et al.

Society for Neuroscience (Oct. 2015).

3. Community Connectomics via Cloud Computing Utilizing m2g: a Reference Pipeline

Gregory Kiar, William R Gray Roncal, Disa Mhembere, Eric Bridgeford, Daniel Clark, Michael Milham, Cameron Craddock, Randal Burns, Joshua Vogelstein

Organization for Human Brain Mapping (June 2015).

other publications

1. Example use case of SIC with the ndmg pipeline (SIC:ndmg)

Gregory Kiar, Krzysztof J Gorgolewski, Dean Kleissas, William Gray Roncal, Brian Litt, Brian Wandell, Russel A Poldrack, Martin Wiener, R Jacob Vogelstein, Randal Burns, Joshua T Vogelstein (2017). GigaScience Database.

2. ndmg: NeuroData's MRI Graphs pipeline

Gregory Kiar, William Gray Roncal, Disa Mhembere, Eric Bridgeford, Randal Burns, Joshua Vogelstein

Zenodo (Aug. 2016).

3. GREMLIN: Graph Estimation from MR Images Leading to Inference in Neuroscience

Gregory Kiar

Master's Thesis, Johns Hopkins University (Apr. 2016).

works in progress

1. Boutiques: a flexible framework for automated application integration in computing platforms

Tristan Glatard, Tristan Aumentado-Armstrong, Natacha Beck, Pierre Bellec, Remi Bernard, Sorina Camarasu-Pop, Frédéric Cervenansky, Samir Das, Rafael Ferreira da Silva, Guillaume Flandin, John Flavin, Pascal Girard, Krzysztof J. Gorgolewski, Charles G. Guttman, Gregory Kiar, Nathaniel Kofalt, Pierre-Olivier Quirion, Pierre Rioux, Marc-Étienne Rousseau, Gunnar Schaeffer, Alan C. Evans

In Preparation (2017).

2. Testing the promise of graph-based analyses of white-matter connectivity

William R Gray Roncal, Jordan Matelsky, GM Hwang, Greg Kiar, C Bradfield, Michael Wolmetz

In Preparation (2017).

3. Optimal Decisions for Discovery Science via Maximizing Discriminability: Applications in Neuroimaging

Shangsi Wang, Zhi Yang, Xi-Nian Zuo, Michael Milham, Cameron Craddock, Gregory Kiar, William R. Gray Roncal, Eric Bridgeford, CORR, Carey E. Preibe, Joshua T. Vogelstein

In Preparation (2017).