gregorykiar

biomedical engineer

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languages

english native speaker,
basic ASL

programming

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

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 software services with the AWS cloud. Development, training, support, and facillitation of the use of tools and services within international collaborations.

Current Activities

05/17 – now **Organization for Human Brian Mapping (OHBM)** — Minneapolis, MN
Open Science SIG - Committee Member
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 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 **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. 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	**CRN Coding Sprint Project Award**	Stanford, 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.

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 Calı, 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 Huganir, 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).

invited talks & organized workshops

1. *Platforms for Developing and Sharing Open Software*
   Online Intensive for Brain Science: Computation and Imaging (Sept. 2017).

2. *ClowdControl: Integrating Quality Control and Pipeline Deployment in the Cloud*
   Organization for Human Brain Mapping Open Science Room (June 27, 2017).

3. *Open Science Session Chair*
   Organization for Human Brain Mapping Open Science Room (June 27, 2017).

4. *Science in the Cloud (SIC): A use-case in MRI Connectomics*
   Organization for Human Brain Mapping Open Science Room (June 26, 2017).

5. *Brain Hacking 101*
   Organization for Human Brain Mapping Open Science Room (June 25, 2017).

6. *NeuroStorm: Accelerating Brain Science Discovery in the Cloud*
   Johns Hopkins University (June 7, 2017).

posters at international conferences

1. 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.

Organization for Human Brain Mapping (June 2017).

2. 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).

3. The Open Connectome Project & NeuroData: Enabling Data Driven Neuroscience at Scale
   Joshua T. Vogelstein, et al.
   Society for Neuroscience (Oct. 2015).

4. 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. Guttmann, 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).