

# gregorykiar

biomedical engineer



## contact

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gregkiar in

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

#### Current Activities

- 05/17 – now **Organization for Human Brain 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 (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	<b>College Prep Program</b> College Mentor, SAT Coach, & Essay Reviewer	Baltimore, MD
2014 – 2016	<b>Thread</b> Grandparent (i.e. supervisor) & Family Member (i.e. volunteer)	Baltimore, MD
2013 – 2014	<b>Carleton University Biomedical Engineering Society</b> President	Ottawa, ON
2013 – 2014	<b>PASS Talks</b> Co-Founder and Vice President	Ottawa, ON
12/12, 12/13	<b>Operation Red Nose Ottawa</b> Navigator and Driver	Ottawa, ON
2010 – 2011	<b>Carleton University Student Emergency Response Team</b> Emergency First Responder	Ottawa, ON

## awards

2017	<b>OHBM BrainHack Travel Award</b>	OHBM, Minneapolis, MN
2014 – 2016	<b>Full-tuition Master's Degree Fellowship</b>	Johns Hopkins University, Baltimore, MD
2014	<b>Graduated with Distinction</b>	Carleton University, Ottawa, ON
2014	<b>Greatest Social Impact Paper</b>	Professional Engineering Ontario (PEO), Ottawa, ON
2014	<b>SEED Fund</b>	Carleton University Engineering Alumni, Ottawa, ON
2014	<b>IEEE Papers Showcase Local Winner</b>	IEEE Ottawa-Carleton Chapter, Ottawa, ON
2014	<b>Carleton Electronics Project Competition Champion</b>	Carleton University, Ottawa, ON
2013	<b>Engineering '65 and '66 Scholarship</b>	Carleton University, Ottawa, ON
2012 – 2014	<b>Dean's Honour List</b>	Carleton University, Ottawa, ON
2012	<b>Clarence C. Gibson Scholarship</b>	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 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).

## 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).*