gregorykiar

biomedical engineer

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languages

english native speaker,
basic ASL

programming

Python, R, MATLAB ♥
C++, x86 assembly,
LaTeX, CSS & HTML

soft skills

leadership, design,
problem solving

education

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

09/14 – now **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.

09/14 – now **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). Has spent more than 500 hours (cumulative) working with students.

Current Activities

10/16 – now **NeuroStorm, Kavli Neuroscience Discovery Institute** — Baltimore, MD
Field Engineer
Interface with brain scientists from around the world to facilitate them using the resources available to them. Identify bottlenecks in utility for neuroscience initiatives and propose solutions and best approaches for resolving data quality issues. Develop accessible tutorials, organize and run hackathons, workshops, and related events for outreach and educational purposes.

09/14 – now **NeuroData** — Baltimore, MD
Chief Neurocartographer and Core Team Member
Performer on core research objectives. Chiefly responsible for content curation and presentation of grant deliverables to funding agency. Manager and organizer of public presence and conferences.

Previous Positions

01/15, 01/16 **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.

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.

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.

Work Experience

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.

Volunteer Experience

06/15 – 09/16 **College Prep Program** Baltimore, MD
College Mentor, SAT Coach, & Essay Reviewer

09/14 – 06/16 **Thread** Baltimore, MD
Grandparent & Volunteer

06/13 – 05/14 **Carleton University Biomedical Engineering Society** Ottawa, ON
President

09/13 – 06/14 **PASS Talks** Ottawa, ON
Co-Founder and Vice President

12/12, 12/13 **Operation Red Nose Ottawa** Ottawa, ON
Navigator and Driver

09/10 – 09/11 **Carleton University Student Emergency Response Team** Ottawa, ON
Emergency First Responder

awards

2014 **Greatest Social Impact Paper** Professional Engineering Ontario (PEO), Ottawa, ON
Awarded to the capstone project with the potential to produce the largest positive societal impact.

2014 **SEED Fund** Carleton University Engineering Alumni, Ottawa, ON
Awarded to the capstone project deemed most likely to become a successful startup.

2014 **IEEE Papers Showcase Local Winner** IEEE Ottawa-Carleton Chapter, Ottawa, ON
Awarded to the capstone project best demonstrating mastery of core electrical engineering principles.

2014 **Carleton Electronics Project Competition Champion** Carleton University, Ottawa, ON
Awarded to the capstone project best demonstrating mastery of core electrical engineering principles.

2013 **Engineering '65 and '66 Scholarship** Carleton University, Ottawa, ON
Awarded to students maintaining a GPA above a 10/12 (the equivalent of an A).

2012 – 2014 **Dean's Honour List** Carleton University, Ottawa, ON
Awarded to students maintaining a GPA above a 10/12 (the equivalent of an A).

2012 **Clarence C. Gibson Scholarship** Carleton University, Ottawa, ON
Awarded to students maintaining a GPA above a 10/12 (the equivalent of an A).

interests

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

publications

under review pre-prints

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 (Oct. 2016).

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 Capota, M. Mallar Chakravarty, Nathan W. Churchill, R. Cameron Craddock, Gabriel A. Devenyi, Anders Eklund, Oscar Esteban, Guillaume Flandin, Satrajit S. Ghosh, J. Swaroop Guntupalli, Mark Jenkinson, Anisha Keshavan, Gregory Kiar, Pradeep Reddy Raamana, David Raffelt, Christopher J. Steele, Pierre-Olivier Quirion, Robert E. Smith, Stephen C. Strother, Gael Varoquaux, Tal Yarkoni, Yida Wang, Russell A. Poldrack

   PLoS CB (Sept. 2016).

3. Grand Challenges for Global Brain Sciences

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

   F1000 Research (Aug. 2016).

articles in peer-reviewed journals

1. 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.

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. ndmg: NeuroData's MRI Graphs pipeline

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

   (Aug. 2016).

2. 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. 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 (2016).

2. NeuroData: Enabling Neuroscience for Everyone

   Joshua T. Vogelstein, et al.

   In Preparation (2016).

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

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

   In Preparation (2016).

4. m2g: A reference pipeline for reliable connectome estimation

   Gregory Kiar*, William R Gray Roncal*, et al.

   In Preparation (2016).