

gregorykiar

Research Scientist, Child Mind Institute

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education

- 2017 – 2021 **Ph.D.** in Biomedical Engineering McGill University, Montreal, QC
Thesis work supervised by Alan Evans and Tristan Glatard on a project entitled:
This is Your Brain on Disk: The Impact of Numerical Instabilities in Neuroscience. Project involved the development of high performance computing infrastructures, the instrumentation and perturbation of neuroimaging pipelines, the evaluation of these perturbations in an analytic context, and the application of perturbed derivatives towards data augmentation in machine learning applications. 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.
- 2018 **Software and Data Carpentry Instructor Training** Compute Canada, Toronto, ON
Running workshops in the context of an evidence-based instructional pedagogy.
- 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

Research Experience

- 04/21 – now **Child Mind Institute — Center for Data Analytics, Innovation, and Rigor** New York City, NY
Director, Research Scientist (Senior Scientist Track)
Leads software development and research teams within the Computational Neuroimaging Laboratory to produce tools and resources that support neuroscience through high performance computing, the application of computational statistics, and machine learning. Develops and executes research programs, obtains funding, and communicates scholarly outputs. Research projects involve evaluating and improving the trustworthiness of tools and techniques used to study the brain to inform decision making surrounding robust data collection, image processing, and ultimately biomarker discovery.
- 05/17 – 04/21 **McGill University — McGill Centre for Integrative Neuroscience** Montreal, QC
Software Developer & Researcher
Responsible for the exploration and integration of distributed software services with high performance computing clouds and clusters, providing development, training, and support towards the use of tools and services within international collaborations. Focused on the development of methods for evaluating the trustworthiness and stability of neuroimaging tools and experiments.
- 04/19 – 07/19 **Empenn — Inria Rennes, Bretagne Atlantique** Rennes, France
Research Intern
Developed web crawler to scrape public neuroimaging databases for processed functional activation maps. Constructed workflow for metadata-based QC at scale with 10,000s of samples. Designed a convolutional neural network for the identification of consensus activation maps across populations.

- 09/14 – 05/17 **Johns Hopkins University — Center for Imaging Science** 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 **Carleton University — Dept. of Systems and Computer Engineering** 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 **Carleton University — Dept. of Systems and Computer Engineering** Ottawa, ON
Research Assistant with Dr. Andy Adler
 Utilized neural networks for inverse modeling of real and simulated biological systems.
- 06/11 – 09/11 **Carleton University — Dept. of Biology** Ottawa, ON
Research Assistant with Dr. Jeffrey Dawson
 Developed robotics platform for studying insect locomotion patterns and behaviour.
- 01/09 – 09/09 **Ottawa Hospital Research Institute — Cancer Research Center** Ottawa, ON
Research Assistant with Dr. Jim Dimitroulakos
 Tested combination therapies of Lovastatin and Cisplatin drugs on colon and breast cancer strains.

Teaching Experience

- 01/19 – 01/20 **Concordia Continuing Education** Montreal, QC
Instructor & Curriculum Developer
 Responsible for the training of working professionals in the basics of "Big Data Technology," including fundamental tools for software development such as Unix, Git, and Docker, and software for numerical analysis such as Python and R. Core contributor in the development of new courses within the "Big Data Solutions for Business" diploma program.
- 05/17 – 05/21 **McGill University, OHBM, Brainhack School, Brain Intensive, others** Montreal, QC
Neuroinformatics Instructor
 Regularly plan and 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.

grants & awards

grants

2022 – 2025	NIH NIMH, 1RF1MH130859 PI: Gregory Kiar Improving the robustness of neuroimaging through exploitation of variability in processing pipelines	Awarded Amount: \$1,504,004.00
2022 – 2023	NSF XSEDE, MED220009 PI: Gregory Kiar Preprocessing and sharing of large-scale open neuroimaging datasets	Awarded Amount: \$117,077.80
2022 – 2023	NSF XSEDE, BIO220056 Role: Co-Investigator PI: Ting Xu Mapping Large-scale Brain Development between Human and Nonhuman Primate	Awarded Amount: \$30,786.95
2021 – 2023	Michael J. Fox Foundation Role: Consultant PI: Tristan Glatard Improving the generalizability and robustness of MRI-derived biomarker of Parkinson's Disease through analytical and data variability evaluations	Awarded Amount: \$305,254.00
2021 – 2022	NSF XSEDE, CIS210056 PI: Gregory Kiar Application of uncertainty quantification for neuroimaging software design, testing, and analysis	Awarded Amount: \$880.00
2018 – 2021	NSERC Canada, CGSD3-519497-2018 PI: Gregory Kiar Supporting scalable computing in neuroimaging for the exploration of numerical instabilities and their impact	Awarded Amount: \$105,000.00

awards

2020	Research Scholar Award	Canadian Open Neuroscience Platform, Montreal, QC
2019	Young Investigator Award	Sage Bionetworks, Seattle, WA
2019	Instructor Training Fellowship	Repronim, Worcester, MA
2019	Globalink Research Award	Mitacs, Montreal, QC
2018	Michael Smith Foreign Study Supplement	NSERC, Ottawa, ON
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	Clarence C. Gibson Scholarship	Carleton University, Ottawa, ON

supervision & academic mentorship

1. Reinder Vos de Wael (Scientific Software Generalist, Child Mind Institute; 2023-)
2. Nathalia Bianchini Esper (Postdoctoral Fellow, Child Mind Institute; 2022-)
3. Elizabeth Kenneally (Software Developer, Child Mind Institute; 2022-)
4. Connor Lane (Software Developer, Child Mind Institute; 2022-)
5. Maya Roberts (Research Assistant, Child Mind Institute; 2022-)
6. Florian Rupprecht (Software Developer, Child Mind Institute; 2022-)
7. Jon Clucas (Software Developer, Child Mind Institute; 2021-)
8. Amy Gutierrez (Software Developer, Child Mind Institute; 2021-2023)
9. Teresa George (Software Developer, Child Mind Institute; 2021-2023)
10. Xinhui Li (Software Developer, Child Mind Institute; 2021-2022)
11. Ali Salari (PhD in Computer Science, Concordia University; with Tristan Glatard; 2019-2022)
12. Hamidreza Heidarzadeh (MSc in Computer Science, Concordia University; with Tristan Glatard; 2018-2019)

memberships & extracurriculars

2021 – now	NMIND Project Leader, Hackathon Organizer	Global
2017 – now	Various Neuroinformatics-based Hackathons and Courses Hackathon Chair, Organizer, & Instructor	Montreal, QC
2020 – 2022	XSEDE, NSF XSEDE Review Allocation Committee Member	Alexandria, VA
2020	COVID-19 HPC Consortium Review Allocation Committee Member	Global
2017 – 2020	Canadian Open Neuroscience Platform Training Committee Trainee Representative	Montreal, QC
2017 – 2020	OHBM Open Science SIG Treasurer, Educational Committee Liaison	Minneapolis, MN
2018 – 2019	Ludmer Centre Seeds of Change Campaign Trainee Ambassador	Montreal, QC
2017 – 2018	OHBM Open Science SIG Hackathon Chair	Minneapolis, MN
2017 – 2018	Healthy Brains for Healthy Lives Trainee Committee President (Neuroinformatics)	Montreal, QC
2015 – 2017	College Prep Program College Mentor, SAT Coach, & Essay Reviewer	Baltimore, MD
2014 – 2016	Thread Volunteer supervisor & student mentor	Baltimore, MD
2013 – 2014	Carleton University Biomedical Engineering Society President	Ottawa, ON
2010 – 2011	Carleton University Student Emergency Response Team Emergency First Responder	Ottawa, ON

reviewed for

1. Aperture (Organization for Human Brain Mapping)
2. COVID-19 High Performance Computing Consortium (NSF)
3. Biological Psychiatry (Elsevier)
4. Cluster Computing (Springer)
5. Extreme Science and Engineering Discovery Environment (NSF)
6. Frontiers in Neuroinformatics (Frontiers)
7. Gigascience (Oxford University Press)
8. Journal of Open Source Software
9. Medical Image Analysis (Elsevier)
10. Nature Communications Biology (Nature Publishing)
11. Nature Scientific Data (Nature Publishing)
12. Neuroimage (Elsevier)
13. Practice & Experience in Advanced Research Computing Conference (NSF)
14. Scipy Conference

publications

published code

For an up-to-date list of published code projects, please visit the GitHub profile of myself (<https://github.com/gkiar>) or my lab (<https://github.com/cmi-dair>).