




Mathieu Dugré

PhD Student Computer Science



Contact


Montreal, Quebec,
Canada

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mathdugre 
  

Languages

French native
English bilingual

Programming

Python, Docker, Linux 
Git, CI/CD, Bash, \LaTeX

Soft skills

Problem solving,
Leadership,
Management,
Communication

Research interests

Performance,
Reduced precision,
Floating-point,
Arithmetic

Personal interests

Rock climbing, Reading,
Language learning,
Baking, Cooking

Education

- 2022–now **PhD Comp.Sci.** Concordia University, Montreal, QC
Thesis work supervised by Dr. Tristan Glatard.
Studying the performance implication of using reduced precision floating-point for neuroimaging applications.
- 2020–2021 **M. Comp.Sci.** Concordia University, Montreal, QC
Fast-Track to PhD
- 2017– 2020 **B. Comp.Sci.** Honours Computer Applications Concordia University, Montreal, QC
Major in Mathematics and Statistics.
Honours work supervised by Dr. Tristan Glatard on a project to minimize the data transfer of container applications in High Performance Computing environment.

Experience

Academic

- 2022 – now **Concordia University** Montreal, QC
Research Assistant | supervised by Dr. Tristan Glatard
Replicate a paper for the LivingPark project. Develop and maintain the livingpark-utils toolkit to accelerate and uniformize the paper replications for LivingPark.
- 2019 – 2021 **Concordia University** Montreal, QC
Research Assistant | supervised by Dr. Tristan Glatard
Developed software for the Canadian Open Neuroscience Platform (CONP). Built a tool for PERFORM Center researchers to share restricted data on CONP portal. Administrated the compute cluster of our research lab. Published a paper at WORKS'19 on the performance of two Big Data engines Dask and Apache Spark.

Teaching

- Winter 2023 **Concordia University** Montreal, QC
Teaching Assistant | Big Data Analytics
Instructed and developed content for Big Data Analytics labs, including interactive Jupyter book for fundamental Big Data workflow with Python such as Python, Git and GitHub, Dask, and PySpark. Publicly released all lab content on GitHub under “big-data-tutorial-101”.
- 2021 – 2022 **Concordia Continuing Education** Montreal, QC
Technical Support Specialist | Ericsson Upskill Program
Instructed and developed workshop content on Version Control and Continuous Integration and Reinforcement Learning. Guided students with relevant software tools for their projects. Assisted project implementations through code review and pair programming.

Industry

2020 – 2020	Bell <i>Software Developer Intern</i> Developed a Python tool for automatic migration of networking inventory in a new database system. It improved efficiency for other teams to access and modify the inventory, while reducing entry errors.	Montreal, QC
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Awards

2023-2026	Postgraduate Scholarship-Doctoral (PGS D)	NSERC, Ottawa, On
2022-2025	Graduate Doctoral Fellowship Award	Concordia University, Montreal, QC
2021	B1X - Bourses de maîtrise en recherche	FRQNT, Quebec, QC
2020	Top Concordian Graduate Entrance Scholarship	Concordia University, Montreal, QC
2020	Concordia Special Entrance Scholarship	Concordia University, Montreal, QC
2020	Alexander Graham Bell Scholarship (NSERC CGS-M)	NSERC, Ottawa, On
2020	Graduated with Distinction	Concordia University, Montreal, QC
2019	Supplements of the NSERC Undergraduate Student Research Awards	FRQNT, Quebec, QC
2019	NSERC Undergraduate Student Research Awards (USRA)	NSERC, Ottawa, On

Extracurricular

2023	BrainHack Global Montreal Organizer	Montreal, QC
2019 – 2020	Seminary on Undergraduate Mathematics in Montreal VP Communication	Montreal, QC
2019 – 2020	Concordia Software Engineering And Computer Science Society Co-VP Competitions	Montreal, QC
2019	PyCon19 Various volunteer tasks	Montreal, QC
2018 – 2019	Data Innovation Playground Director of Projects	Montreal, QC

Competitions

2019	International Collegiate Programming Contest (ICPC) - NENA Regional	10th place
2018	IEEEExtreme 12.0	10th place (Canada)
2018	MTL - Google Tech Challenge	1st place
2017	IEEEExtreme 11.0	15th place (Canada)

Reviewed for

1. BMC Bioinformatics

Publications

Pre-prints

1. Longitudinal brain structure changes in Parkinson's disease: a replication study
Andrzej Sokolowski, Nikhil Bhagwat, Yohan Chatelain, **Mathieu Dugré**, Alexandru Hanganu, Oury Monchi, Brent McPherson, Michelle Wang, Jean-Baptiste Poline, Madeleine Sharp, Tristan Glatard
bioRxiv (2023). [biorxiv.org](https://www.biorxiv.org/).
2. Predicting Parkinson's disease progression using MRI-based white matter radiomic biomarker and machine learning: a reproducibility and replicability study
Mohanad Arafe, Nikhil Parag Bhagwat, Yohan Chatelain, **Mathieu Dugré**, Andrzej Sokolowski, Michelle Wang, Yiming Xiao, Madeleine Sharp, Jean-Baptiste Poline, Tristan Glatard
bioRxiv (2023). [biorxiv.org](https://www.biorxiv.org/).
3. Sea: A lightweight data-placement library for Big Data scientific computing
Valérie Hayot-Sasson, **Mathieu Dugré**, Tristan Glatard
(July 2022).

Articles in peer-reviewed journals

1. Data and Tools Integration in the Canadian Open Neuroscience Platform
Jean-Baptiste Poline, Samir Das, Tristan Glatard, Cécile Madjar, Erin W Dickie, Xavier Lecours, Thomas Beaudry, Natacha Beck, Brendan Behan, Shawn T Brown, David Bujold, Michael Beauvais, Bryan Caron, Candice Czech, Moyez Dharsee, **Mathieu Dugré**, Ken Evans, Tom Gee, Giulia Ippoliti, Gregory Kiar, Bartha Maria Knoppers, Tristan Kuehn, Diana Le, Derek Lo, Mandana Mazaheri, Dave MacFarlane, Naser Muja, Emmet A O'Brien, Liam O'Callaghan, Santiago Paiva, Patrick Park, Darcy Quesnel, Henri Rabelais, Pierre Rioux, Mélanie Legault, Jennifer Tremblay-Mercier, David Rotenberg, Jessica Stone, Ted Strauss, Ksenia Zaytseva, Joey Zhou, Simon Duchesne, Ali R Khan, Sean Hill, Alan C Evans
Scientific Data (2023). [nature.com](https://www.nature.com/).
2. Performance comparison of Dask and Apache Spark on HPC systems for neuroimaging
Mathieu Dugré, Valérie Hayot-Sasson, Tristan Glatard
Concurr. Comput. (Jan. 2023). Wiley.
3. An analysis of security vulnerabilities in container images for scientific data analysis
B Kaur, **M Dugré**, A Hanna, T Glatard
Gigascience (2021). academic.oup.com.

Proceedings in international peer-reviewed conferences

1. A performance comparison of dask and apache spark for data-intensive neuroimaging pipelines
M Dugré, V Hayot-Sasson, T Glatard
2019 IEEE/ACM (2019). ieeexplore.ieee.org.

Invited talks & Workshops

1. Git and GitHub Workflow for Research in Neuroimaging
MTL Brainhack Global (Dec. 2019), Workshop.

Posters at international conferences

1. Data systems in the LivingPark project

Mathieu Dugré, Mohanad Arafe, Jonathan Armoza, Nikhil Bhagwat, Yohan Chatelain, Arman Jahanpour, Noah James Dinh, Greg Kiar, Brent McPherson, Niusha Mirhakimi, Chelsie Ng Man King, Vincent Qing, Jacob Sanz-Robinson, Andrzej Sokolowski, Mohammad Torabi, Sebastian Urchs, Michelle Wang, Madeleine Sharp, Jean-Baptiste Poline, Tristan Glatard

Data Systems meet Data Science Workshop (Oct. 2022).

Published code

For an up-to-date list of published code projects, please visit my GitHub profile at <https://github.com/mathdugre>.