Evelyne RINGOOT

Cambridge, MA, USA | eringoot@mit.edu | https://evelyne-ringoot.github.io/
LinkedIn: evelyne-ringoot, GitHub: evelyne-ringoot, Google scholar: Evelyne Ringoot, ORCID: 0000-0003-4661-1483

RESEARCH INTERESTS

Making large-scale linear algebra fast, portable and accessible: Performance optimization and algorithm engineering on GPUs and High-performance Computing (HPC) hardware for large-scale dense mixed-precision linear algebra for AI and Scientific Computing

EDUCATION AND RESEARCH

AUG 2022 –PRESENT	**Massachusetts Institute of Technology** – MS & PhD *Computational Science and Mathematics* (GPA 5/5)
	GPU and HPC implementation of multi-scale numerical linear algebra algorithms (prof. A. Edelman)
	Relevant courses: Accelerated Computing (GPU CUDA kernel optimization), Performance Engineering
SEP 2018 – SEP 2020	**Vrije Universiteit Brussel/ Université libre de Bruxelles** - *MSc Civil Engineering (great distinction)*
	Thesis: numerical algorithm for soft adhesive surface peeling and reattachment (prof. T.J. Massart)
FEB 2020 – SEP 2020	**Massachusetts Institute of Technology** – *visiting student* (prof. T. Cohen)
SEP 2018 – JUN 2019	**École Polytechnique Fédérale de Lausanne** EPFL, Switzerland - *Exchange year master Civil Engineering*
	Research projects: Cascading fracture due to flexural waves (prof. J.F. Molinari)
	Neural networks for AI object recognition (prof A. Alahi)
	Machine Learning Classifiers for transportation mode prediction (dr. T. Hillel)
JUN 2018 – AUG 2018	**Ulsan National Institute of Science and Technology, Ulsan** – *research intern Urban Planning and Analytics*
	Modelling influence of gentrification on migration and housing prices in ABM model *(prof. J. Kim)*
SEP 2015 – JUN 2018	**Vrije Universiteit Brussel** VUB, Belgium **-** *BSc in Engineering Sciences (distinction)*

PROFESSIONAL EXPERIENCE

OCT 2020 – JUL 2022	**Risk Dynamics, a McKinsey Company, Brussels**– *analyst, sr. analyst*
	Advanced analytics models in financial industry advisory: review of algorithmic trading strategy and advising on risk areas, regulatory capital model development, nowcasting of economic variables
JUN 2019 – AUG 2019	**BlackRock London: Risk & Quantitative Analysis, London** - *summer analyst*
	Historical analysis of risk and return drivers of ESG oriented portfolios to advise risk-optimal investment
NOV 2016 – AUG 2017	**W.I.V. Healthdata Brussels** – *student job developer (part-time)*
	Supporting migration to new environment: setup of a server, gathering and coupling of large data sets

PUBLICATIONS

Carrica, V., Alomairy, R., **Ringoot, E.,** Edelman, A., 'Hierarchical Precision and Recursion for Accelerating Symmetric Linear Solves on MXUs, Jan 2026 (preprint), arXiv: 2601.08082

Ringoot, E., Alomairy, R., Edelman, A., 'Accelerating Bidiagonalization of Banded Matrices through Memory-Aware Bulge-Chasing on GPUs', Oct 2025 (preprint), arXiv:2510.12705

Ringoot, E., Alomairy, R., Churavy, V., Edelman, A., 'Performant Unified GPU Kernels for Portable Singular Value Computation Across Hardware and Precision', ICPP '25(https://icpp2025.sdsc.edu), Sep 2025 (in press), arXiv:2508.06339

Carrica, V., Onyango, M., Alomairy, R., **Ringoot, E.,** Schloss, J., Edelman, A., (2025) Toward Portable GPU Performance: Julia Recursive Implementation of TRMM and TRSM, In: Asynchronous Many-Task Systems and Applications. WAMTA 2025. Springer. https://doi.org/10.1007/978-3-031-97196-9_13

Xuan, S., Alomairy, R., **Ringoot, E.,** Tome, F., Samaroo, J., Edelman, A. (2024), Synthesizing Numerical Linear Algebra using Julia, IEEE HPEC 2024, https://ieee-hpec.org/wp-content/uploads/2025/01/161.pdf **(best short paper award)**

Ringoot, E., Roch, T., Molinari, J.F., Massart, T.J. and Cohen, T., (2021), Stick–slip phenomena and Schallamach waves captured using reversible cohesive elements, *Journal of the Mechanics and Physics of Solids*, doi:10.1016/j.jmps.2021.104528

RESEARCH TALKS AND POSTERS

SC25, **Student Research Poster**, 'Scaling Singular Values Beyond GPU Memory Limits: Out-of-Core, GPU-Accelerated, and Unified Across Data Precision and Hardware', St. Louis, USA, Nov 2025, SC25 processings:post272 **(2nd place best graduate poster)**

SC25, **Women in HPC, '**Next Generation Linear Algebra: One Singular Value Decomposition to Catch Them All across Data Size, Precision, and Hardware', St. Louis, USA, Nov 2025, doi:10.5281/zenodo.17558733

ICPP 25, **Student poster presentation**, 'Performant unified GPU kernels for Singular Values across Hardware and Precision Through Hyperparameter tuning', San Diego, USA, Sept 2025

PASC 2025, **Minisymposium talk**, 'A GPU-Accelerated Unified API for Singular Values Enabling Reproducibility Across Architectures and Data Types', Brugg, CH, June 2025, https://pasc25.pasc-conference.org/program/

SIAM CSE 2025, **Minisymposum talk,** 'Empowering Scientific Research with a Scalable, Hardware-Agnostic Tiled Linear Algebra Framework in Julia', Fort Worth, TX,USA, March 2025, https://www.siam.org/media/fyvh3qlf/cse25_abstracts.pdf

CSCS - Swiss National Supercomputing Centre/USI Lugano, **Invited Tutorial** 2024, Implementing Hardware-Agnostic Large-Scale Tiled Linear Algebra: Lessons in HPC Accessibility, Lugano, CH, July 2024

MIT **CCSE Symposium** 2023 poster, A Julia-native Out-of-Core GPU SVD for large matrices, Cambridge, MA, USA, March 2023

FELLOWSHIPS, AWARDS AND FUNDING

SPRING 2026	**MIT ORCD Strategic Seed Fund Award** – Multi-scale Mixed-Precision Hardware-Agnostic Linear Algebra
2025 – 2026	**NSF ACCESS-CI Allocation for PhD research** – CIS250776 GPU hardware portability for linear algebra
2022 – 2023	**Belgian American Educational Foundation** – Hoover fellow of the 2022 boat
2018 – 2019	**Swiss European Mobility Programme** –Fellowship for EPF Lausanne - 6 students from VUB selected
Travel awards	**SIGHPC** award for SC25, **NSF-sponsored** award for ICPP25, **SIAM** award for **SIAM CSE25** and **SIAMPP26**

HONORS AND SELECTIVE PROGRAMS

NOV 2025	**ACM SRC Graduate Supercomputing (SC25):** second place best graduate poster
AUG 2020	**VUB/ULB** – Master thesis received maximum grade (20/20) - awarded to top <2%
AUG 2025	**Argonne Training Program on Extreme-Scale Computing (ATPESC)** 2025
JUL 2025	**International HPC Summer School (IHPCSS)** 2025, Lisbon
JUL 2024	**Summer University 2024** on Effective High-Performance Computing Lugano

TEACHING AND ADVISING

FALL 2023 – PRESENT	**MIT undergraduate research program** (co-)advisor to: Victoria Carrica, Maxwell Onyango, Eric Lin, Shiqi Cheng, Natalie Tang, Ruhundaka Ejilemele, Previous: Sophie Xuan, Ruth Lu, Hao Zhu, Daniel Xu
FALL 2025	**18.C06 Linear Algebra and Optimization** Recitation leader
SUMMER 2025	**Kaufman Teaching Certificate Program and TA training days** – MIT Teaching +Learning Lab
SPRING 2025	**Numerical Methods: Parallelism in Julia** Teaching assistant and guest lecturer
FALL 2024	**MIT Mathematics Teacher training:** practice teaching, microteaching and recitation training
SPRING 2023	**Parallel computing and scientific ML in Julia** teaching assistant
SEP 2013 - JUN 2018	**Figure Skating coach** for youth, **Volunteer tutor** for high school children in mathematics

SKILLS

Languages:	**English:** Fluent (MS + PhD, IELTS 8.5 in 2020)
	Dutch: Fluent (pre-university schooling + BSc + MSc)
	French: Conversational (DALF C1 in 2019)
	Polish: Conversational (Jagiellonian University C1 2014)
Programming:	OpenMP, MPI, C++, CUDA, C, Julia, Python, Java

OTHER

Community service (ongoing): MIT SIAM Student Chapter president, MIT European Club Board

Community service (previous): MIT GSC DEI committee, MIT Association for CSE Students president, McKinsey Brussels Junior Associate Committee co-lead, VUB Engineering dept. Study Program Committee student representative

Professional memberships: SIAM student member, **ACM+SIGHPC** student member**, IEEE** student member, **WHPC** member

Hobbies: Figure skating, indoor bouldering beginner, skiing and spending time in nature