Evelyne RINGOOT

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RESEARCH INTERESTS

Performance engineering and algorithm optimization for High-performance Computing (HPC) and AI accelerators (GPUs); large-scale dense linear algebra; mixed-precision algorithms; scaling AI workloads for large datasets

EDUCATION AND RESEARCH

AUG 2022 –PRESENT **Massachusetts Institute of Technology** – SM & 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

Ringoot, E., Alomairy, R., Edelman, A., 'A GPU-resident Memory-Aware Algorithm for Accelerating Bidiagonalization of Banded Matrices', 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

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

RESEARCH TALKS AND POSTERS (CONTINUED)

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

2025 – 2026	**NSF ACCESS-CI Allocation for PhD research** - 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

HONORS AND SELECTIVE PROGRAMS

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 – 70 PhDs, postdocs selected
JUL 2025	**International HPC Summer School (IHPCSS)** 2025, Lisbon – 120 PhDs, postdocs selected
JUL 2024	**Summer University 2024** on Effective High-Performance Computing Lugano, - 30 students selected

TEACHING

Fall 2025	**18.C06 Linear Algebra and Optimization** Recitation leader
Fall 2025	**Kaufman Teaching Certificate Program** – MIT Teaching +Learning Lab Spring
Summer 2025	**TA Days Training** – MIT Teaching +Learning Lab Summer
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 2015 - MAY 2018	**Figure Skating coach** for recreative and competitive youth figure skaters
SEP 2013 - JUN 2018	**Volunteer tutor** for high school children in mathematics and sciences

COMMUNITY SERVICE

JAN 2025 – PRESENT	**MIT SIAM student** chapter president
MAR 2023 – PRESENT	**MIT European Club** – Board member (organizer of largest Europe-focused career fair in USA)
JAN 2023 – JUL 2024	**MIT Graduate Student Council Diversity Equity Inclusion Committee**
MAR 2023 – DEC 2024	**MIT Association for CSE Students** – Board member
JAN 2021 – JUL 2022	**McKinsey Brussels Junior Associate Committee** - co-lead
FEB 2020 – SEP 2020	**MIT Visiting Student Association** - board member
SEP 2016 – JUN 2018	**Study Program Committee VUB Engineering dept**.– student representative
SEP 2011 – JUN 2014	**Student Council Ursulinen Mechelen** (High School)– member

SKILLS

Languages:	**English:** Fluent (MS + PhD, IELTS 8.5 in 2020)
	Dutch: Fluent (pre-university schooling + BSc + MSc)
	French: Conversational proficiency (DALF C1 in 2019)
	Polish: Conversational proficiency (Jagiellonian University C1 in 2014)
Programming:	OpenMP, MPI, C++, CUDA, C, Julia, Python, Java
Simulations:	Finite element analysis, Numerical optimization, Agent-based modelling, Mixed-precision algorithms, Machine learning and neural networks for AI (PyTorch, machine learning classifiers),

OTHER

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