Eve Le Guillou

HPC · Distributed computing
Topological Data Analysis

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Education

2017 - 2021 **Multidisciplinary engineering degree** École Centrale de Lille, France
"Data Science and Artificial Intelligence" track.
Completed with a GPA of 3.7.

2019 - 2020 **Master of Science** Cranfield University, UK
Computational and Software Techniques in Engineering in the "Software Engineering for Technical Computing" track.
Completed with an overall mark of 87.5/100.

2015 - 2017 **Classe Préparatoire aux Grandes Écoles** (in Maths and Physics) Lycée Corneille de Rouen, France
Intensive undergraduate preparation course for admission to engineering Grandes Ecoles.

Work experience

April 2022 - October 2025 **Ph.D.** in Computer Science CNRS, Sorbonne Université (LIP6), Université de Lille (CRIStAL)
Title: *Distributed Topological Analysis*
Advisors: Julien Tierny and Pierre Fortin

Oct. 2021 - March 2022 **Research Engineer** CNRS, Sorbonne Université (LIP6), Université de Lille (CRIStAL)
Title: *Development of topological data analysis algorithms in a distributed memory context.*

March - Sept. 2021 **Engineering Intern** TRINOV, France
Title: *Development of a software for waste management to automatize the classification of scanned documents and extraction of data using deep learning models.*

July - August 2019 **Research Intern** DEFROST Team at INRIA, France
Title: *Development of bindings and unit testing for the new Python3 interface of the multiphysics simulation oriented plateform SOFA.*

July - August 2018 **Engineering Intern** IT department of the South Province, New Caledonia
Title: *Configuration of dynamic dashboards to evaluate the health of the information system using the Elastic Stack.*

Research

Publications

2025

- (Under second round of review) **Distributed Discrete Morse Sandwich: Efficient Computation of Persistence Diagrams for Massive Scalar Data**, Eve Le Guillou, Pierre Fortin, Julien Tierny.
  IEEE Transactions on Parallel and Distributed Systems.

2024

- **TTK is Getting MPI-Ready**, Eve Le Guillou, Michael Will, Pierre Guillou, Jonas Lukasczyk, Pierre Fortin, Christoph Garth, Julien Tierny.
  IEEE Transactions on Visualization and Computer Graphics, vol. 30, no. 8, pp. 5875-5892, Aug. 2024.
  https://doi.org/10.1109/tvcg.2024.3390219

2021

- **How to Modify LAMMPS: From the Prospective of a Particle Method Researcher**, Andrea Albano, Eve le Guillou, Antoine Danzé, Irene Moulitsas, Iwan H. Sahputra, Amin Rahmat, Carlos Alberto Duque-Daza, Xiaocheng Shang, Khai Ching Ng, Mostapha Ariane, and et al. *ChemEngineering, vol. 5, no. 2, article 30, 2021.*
  `https://doi.org/10.3390/chemengineering5020030`

Talks

2025

- **Distributed Discrete Morse Sandwich: Efficient Computation of Persistence Diagrams for Massive Scalar Data** , *September* 23^{rd}*, ParaView User Day*
  Annual meeting of ParaView users organized by Kitware
- **Distributed Topological Data Analysis with TTK and MPI** , *June* 26^{th}*, COMPAS*
  French national conference on parallelism, architecture and system
- **Distributed Discrete Morse Sandwich: Efficient Computation of Persistence Diagrams for Massive Scalar Data** , *June* 2^{nd}*, Journées APR*
  Annual meeting of the APR team from the LIP6 laboratory

2024

- **TTK is Getting MPI-Ready** , *December* 12^{th}*, CFHP Team Presentation*
  Monthly meeting of the CFHP team from the CRIStAL laboratory
- **TTK is Getting MPI-Ready** , *October* 17^{th}*, IEEE VIS conference* (Rank: A)
- **TTK is Getting MPI-Ready** , *September* 26^{th}*, ParaView User Day Europe*
  Annual meeting of ParaView users organized by Kitware
- **TTK is Getting MPI-Ready** , *June* 18^{th}*, Journées Visualization*
  Annual meeting of the french visualization community
- **TTK is Getting MPI-Ready** , *May* 30^{th}*, Journées APR*
  Annual meeting of the APR team from the LIP6 laboratory

2023

- **Topological Data Analysis on** $1,536$ **cores** , *November* 8^{th}*, MeSU User Day*
  Annual meeting of the MeSU users of Sorbonne Université

Professional Service

2024

- Reviewer for **PDSEC** (IPDPS workshop)

Awards

2019-2020 Best Overall Woman — Cranfield University

In Computational Engineering Sciences.

2019-2020 Best Overall Achievement — Cranfield University

In the "Software Engineering for Technical Computing" track on the M.Sc. in Computational and Software Techniques in Engineering

Teaching

2023 - 2024

- **Distributed systems and processing** , $21h$ in Master 2 using C and MPI
- **Fundamentals of C programming** , $21h$ in Bachelor 2 using C
- **Shell and scripting language** , $12h$ in Bachelor 2 using Unix and Git

2022 - 2023

- **Algorithms and Programming** , $36h$ in Bachelor 1 using Python
- **Shell and scripting language** , $12h$ in Bachelor 2 using Unix and Git

2021 - 2022

- **Algorithms and Programming** , $36h$ in Bachelor 1 using Python