

## Contact

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linkedin.com/in/mmadon

### Address

Heinrichstrasse 68/3  
8010 Graz, Austria

## Skills

Leadership, teamwork,  
quick learner,  
autonomous

### Programming

C++, Python, Pandas,  
PHP/HTML/CSS/SQL  
Linux, Git, VSCode

### Research impact

7 publications  
h-index: 5 (G.Scholar)

### Languages

French (native)  
English (C2)  
Swedish (B2)  
Spanish (B2)  
German (B1)

## Interests

Green IT  
Sustainability  
Open Source  
Reproducibility

### Hobbies

Climbing, hiking,  
caving, motorbiking  
and choir singing

# Maël Madon

## Researcher in Computer Science

### About Me

Pluridisciplinary researcher with interest in studying the environmental impact of computing. I use both quantitative (simulation, data analysis) and qualitative (interview, thematic analysis) methods.

## Education

### 2024, PhD in Computer Science

Université de Toulouse (Toulouse, FRANCE), IRIT laboratory

### 2021, M.Eng. in Computer Science

KTH Royal Institute of Technology (Stockholm, SWEDEN)

### 2021, École Polytechnique's diploma

École Polytechnique (Paris, FRANCE)

France's leading school of Science and Engineering

## Research Experience

### Apr21 - Jun24, PhD Thesis

Université de Toulouse (Toulouse, FRANCE), IRIT laboratory

Thesis title: "Digital Sufficiency in Data Centers: Studying the Impact of User Behaviors"

Supervisors: Georges Da Costa and Jean-Marc Pierson

### Main outcomes:

- Development of the HPC user simulator Batmen (LGPLv3) in C++.
- In-depth study of how to correctly model user behavior when evaluating the performance of distributed systems [J1].
- Simulation and experimental characterization of the potential of digital sufficiency behaviors to decrease environmental impact [C4].
- Interdisciplinary social science study of digital sufficiency in the cloud [C3], during a research visit at the [Vrije Universiteit Amsterdam](#) (Prof. Patricia Lago) between October and December 2022.

### Other collaborations:

- Active participation in the state-funded research project Datazero2 studying renewably-powered data centers.
- Qualitative study to identify "dark patterns" in cloud and edge [C5].
- Experimental validation of MPI malleability under realistic HPC conditions [U1].
- Coordination of a think tank of Labo1point5 to reflect upon Computer Science sustainably responsible research agendas.

### Sep20 - Mar21, Master's Thesis

Ericsson (Stockholm, SWEDEN)

Developing a parameterized embodied emissions calculator for telecommunication base stations, based on Life Cycle Assessment results.

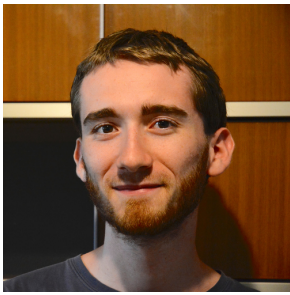
Supervisors: Daniel Pargman (KTH) and Pernilla Bergmark (Ericsson)

### Apr - Jul19, Research Intern

Université de Toulouse (Toulouse, FRANCE), IRIT laboratory

Studying pre-cooling of a data center powered by renewable energies [C6]

Supervisor: Jean-Marc Pierson



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## Teaching and Supervision

### Sep21 - Jun24, PhD student teaching assistant

Université de Toulouse (Toulouse, FRANCE)

Workload of 64h/year for three years

Conception and implementation of a 5-session lab (CC-BY-NC-SA) for the course **Resource Management for Embedded Systems**

Master courses taught: **Parallelism** (lab works in MPI), **Collaborative Development** (lab works in Git)

Undergraduate courses taught: **Algorithmic** (practical works in Python), **Programming in C** (practical work in C), **Networking and Systems** (practical work in C), **Basics of Computer Architecture and System** (exercises and practical works in shell)

### Supervision

- Ambre Liabat, n7 Toulouse (Jun-Jul24): extension of a simulation campaign and creation of Batman documentation.
- Jolyne Gatt, ENS Lyon (Feb-Jul23): energy-aware user behavior to deal with intermittent energy sources in data center [C1].
- Maliha Nawshin Rahman, VU Amsterdam (Feb-Jul23): digital sufficiency of cloud usage in flexible work [C2].

## Collective responsibilities

### 2024, ICT4S'24 conference in Stockholm

Member of the organizing committee as Sponsorship Chair

Member of the program committee as reviewer

### 2021 - 2024, Ecological Transition Mission of IRIT lab

Member of the board (time spent: approx. 2h/week)

## Funding and awards

### 2021 - 2024, AMX Doctoral Grant

Full three-year PhD funding from École Polytechnique

## Extracurricular activities

### Jul24 - Aug25, Gap Year

40-day alpine crossing on foot

Backpacking and volunteering in South America

### 2017 - now, Member of a choir

2017-19 Ensemble vocal de l'Ecole polytechnique (Paris)

2019-21 Kongl. Tecknologkören (Stockholm)

2021-24 Co-funder of Södersken choir, member of Archipels (Toulouse)

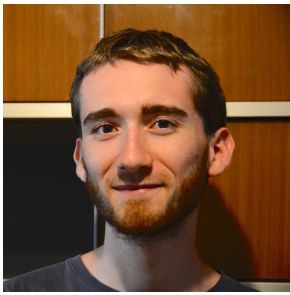
2025-now Grazer Universitätschor (Graz)

### 2017 - now, caving

2017-19 President of the Ecole polytechnique caving club (Paris)

2021-25 Member of S3C (Toulouse)

2025-now Member of Höhlenbären (Graz)



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## List of publications

### Peer-reviewed journals

- [J1] Maël Madon, Georges Da Costa, and Jean-Marc Pierson. “Replay with Feedback: How Does the Performance of HPC System Impact User Submission Behavior?” In: *Future Generation Computer Systems* 155 (Jan. 2024), pp. 66–79. ISSN: 0167-739X. DOI: 10.1016/j.future.2024.01.024.

### Peer-reviewed conferences and workshops

- [C1] Jolyne Gatt, Maël Madon, and Georges Da Costa. “Digital Sufficiency Behaviors to Deal with Intermittent Energy Sources in a Data Center”. In: *ICT4S 2024: International Conference on ICT for Sustainability*. Stockholm, Sweden, June 2024. DOI: 10.1109/ICT4S64576.2024.00015.
- [C2] Maliha Nawshin Rahman, Maël Madon, and Patricia Lago. “Sufficient Use of the Cloud for Work: Practitioners’ Perception and Potential for Energy Saving”. In: *ICT4S 2024: International Conference on ICT for Sustainability*. Stockholm, Sweden, June 2024. DOI: 10.1109/ICT4S64576.2024.00038.
- [C3] Maël Madon and Patricia Lago. “We Are Always on, Is That Really Necessary?” Exploring the Path to Digital Sufficiency in Flexible Work”. In: *ICT4S 2023: International Conference on ICT for Sustainability*. Rennes, France: IEEE, June 2023, p. 11. DOI: 10.1109/ICT4S58814.2023.00012.
- [C4] Maël Madon, Georges Da Costa, and Jean-Marc Pierson. “Characterization of Different User Behaviors for Demand Response in Data Centers”. In: *Euro-Par 2022: Parallel Processing*. Ed. by José Cano and Phil Trinder. Lecture Notes in Computer Science. Cham: Springer International Publishing, Aug. 2022, pp. 53–68. ISBN: 978-3-031-12597-3. DOI: 10.1007/978-3-031-12597-3\_4.
- [C5] Klervie Toczé, Maël Madon, Muriel Garcia, and Patricia Lago. “The Dark Side of Cloud and Edge Computing: An Exploratory Study”. In: *Computing within Limits*. LIMITS, June 2022. DOI: 10.21428/bf6fb269.9422c084.
- [C6] Maël Madon and Jean-Marc Pierson. “Integrating Pre-Cooling of Data Center Operated with Renewable Energies”. In: *2020 IEEE Green Computing and Communications (GreenCom)*. Rhodos, 2020, p. 10. DOI: 10.1109/iThings - GreenCom - CPSCoM - SmartData - Cybermatics50389.2020.00068.

### Under review

- [U1] Sergio Iserte, Maël Madon, Georges Da Costa, Jean-Marc Pierson, and Antonio J. Pena. “MPI Malleability Validation under Replayed Real-World HPC Conditions”. In: *Future Generation Computer Systems* (2025). Submitted.