

Mathieu Pont

Post-doctoral Researcher

✉ mathieu.pont@outlook.com

>ID 0000-0002-0037-0314

⌚ <https://github.com/MatPont>

🌐 <https://mathieu-pont.github.io>

👤 RPTU Kaiserslautern-Landau, Scientific Visualization Lab, Germany.

Work Experience

Oct. 2024 – Ongoing	Post-doctoral Position <i>RPTU Kaiserslautern-Landau, Germany (Scientific Visualization Lab).</i>
Dec. 2023 – Sep. 2024	Post-doctoral Position <i>CNRS and Sorbonne Université (LIP6).</i>
2020 (6 months)	Master 2 Research Intern <i>CNRS and Sorbonne Université (LIP6).</i> Title: <i>Topologically Discriminant Metric.</i> Advisor: <i>Julien Tierny.</i>
2019 (3 months)	Master 1 Research Intern <i>Paris Descartes University (LIPADE).</i> Title: <i>Biomedical Corpus Analysis.</i> Advisor: <i>Séverine Affeldt.</i>
2018 (3 months)	Bachelor Research Intern <i>Toulouse Paul Sabatier University (IRIT).</i> Title: <i>Comparison of Deep Reinforcement Learning methods with an existing Multi-Agent System.</i> Advisors: <i>Frédéric Migeon and Jérôme Mengin.</i>
2016 (3 months)	DUT Research Intern <i>ISAE-Supaero.</i> Title: <i>Server Room Thermal Monitoring and Evaluation of EV3 Robotic Kit.</i> Advisors: <i>Régine Leconte and Jean-François Dassieu.</i>

Education

Oct. 2020 – Nov. 2023	Ph.D. in Computer Science <i>CNRS and Sorbonne Université (LIP6).</i> Title: <i>Analysis of Ensembles of Topological Descriptors.</i> Advisor: <i>Julien Tierny.</i>
2018 – 2020	Master's Degree in Computer Science <i>"Machine Learning for Data Science" track of Paris Descartes University.</i> Rank: <i>1 / 38 (S4) ; 1 / 37 (S3) ; 1 / 33 (S2) and 3 / 33 (S1)</i>
2016 – 2018	Bachelor's Degree in Computer Science <i>Toulouse Paul Sabatier University.</i> Rank: <i>4 / 152</i>
2014 – 2016	DUT GEII (Electrical and Computer Science Engineering) <i>Toulouse Paul Sabatier University.</i>

Awards

- 2023
- **Best Paper Honorable Mention Award** at IEEE VIS 2023
For the paper: "Merge Tree Geodesics and Barycenters with Path Mappings"
 - **Best Paper and Presentation Award** at CORESA 2023
For the talk: "Analyse en Géodésiques Principales d'Arbres de Fusion (et de Diagrammes de Persistance)"

Research

Supervision

- Master Student
- Michelle Ditz (Sep. 2025 – Feb. 2026)
Title: *Stable Branch Decomposition-Independent Edit Distances between Merge Trees.*

Thesis

- 2023
- **Analysis of Ensembles of Topological Descriptors**
Mathieu Pont
Ph.D. thesis in Computer Science
Committee: *Gabriel Peyré (President), David Coeurjolly (Reviewer), Vijay Natarajan (Reviewer), Elsa Cazelles (Examiner), Stanley Durleman (Examiner), Roland Kwitt (Examiner), Katharine Turner (Examiner), Julien Tierny (Advisor)*

Publications

- 2025
- **Region-Aware Wasserstein Distances of Persistence Diagrams and Merge Trees**
Mathieu Pont and Christoph Garth
Submitted, 2025.
- 2024
- **A Practical Solver for Scalar Data Topological Simplification**
Mohamed Kissi, Mathieu Pont, Joshua A. Levine and Julien Tierny
IEEE Transactions on Visualization and Computer Graphics
Proc. of IEEE VIS 2024.
- 2023
- **Wasserstein Auto-Encoders of Merge Trees (and Persistence Diagrams)**
Mathieu Pont and Julien Tierny
IEEE Transactions on Visualization and Computer Graphics
Presented at IEEE VIS 2024.
 - **Merge Tree Geodesics and Barycenters with Path Mappings**
Florian Wetzels, Mathieu Pont, Julien Tierny and Christoph Garth
IEEE Transactions on Visualization and Computer Graphics
Proc. of IEEE VIS 2023.
Best Paper Honorable Mention Award
- 2022
- **Principal Geodesic Analysis of Merge Trees (and Persistence Diagrams)**
Mathieu Pont, Jules Vidal and Julien Tierny
IEEE Transactions on Visualization and Computer Graphics
Presented at IEEE VIS 2023.

2021

- **Wasserstein Distances, Geodesics and Barycenters of Merge Trees**
Mathieu Pont, Jules Vidal, Julie Delon and Julien Tierny
IEEE Transactions on Visualization and Computer Graphics
Proc. of IEEE VIS 2021.

Technical Reports

2025

- **Hands-On TTK Tutorial: Solving Practical Problems in Small Groups**
Jonas Lukasczyk, Christoph Garth, Michael Will, Mathieu Pont and Julien Tierny
IEEE VIS Tutorials 2025

2023

- **A Hands-on TTK Tutorial for Absolute Beginners**
Christoph Garth, Robin Maack, Mathieu Pont, Julien Tierny, Bei Wang, Florian Wetzel, Michael Will
IEEE VIS Tutorials 2023

2022

- **Topological Analysis of Ensemble Scalar Data with TTK, A Sequel**
Christoph Garth, Charles Gueunet, Pierre Guillou, Federico Iuricich, Joshua Levine, Jonas Lukasczyk, Mathieu Pont, Julien Tierny, Jules Vidal, Bei Wang and Florian Wetzel
IEEE VIS Tutorials 2022

Professional Service

Program Committee

- **IEEE VIS Short Papers**
2025

Reviewer

- **La Matematica**
2024
- **IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)**
2023

Talks

2025

- **Tutorial: Merge Tree Computation and Feature Tracking in TTK**
Nov. 3rd, IEEE VIS
- **Poster: Wasserstein Auto-Encoders of Merge Trees (and Persistence Diagrams)**
Nov. 21st, CORESA
- **Wasserstein Auto-Encoders of Merge Trees (and Persistence Diagrams)**
Oct. 17th, IEEE VIS
- **Variability Analysis of Ensembles of Topological Descriptors**
Jul. 1st, RPTU Kaiserslautern-Landau Invited Talk
- **Auto-Encodeurs de Wasserstein d'Arbres de Fusion (et de Diagrammes de Persistance)**
Jun. 18th, Journée Visu
- **Auto-Encodeurs de Wasserstein d'Arbres de Fusion (et de Diagrammes de Persistance)**
May 30th, Journée APR

2023

- **Analysis of Ensembles of Topological Descriptors**
Dec. 1st, Ph.D. Defense
- **Principal Geodesic Analysis of Merge Trees (and Persistence Diagrams)**
Oct. 26th, IEEE VIS
- **Tutorial: Wasserstein Distances between Persistence Diagrams in TTK**
Oct. 22nd, IEEE VIS

- 2023
(continued)
- Principal Geodesic Analysis of Merge Trees (and Persistence Diagrams)
Oct. 16th, Pre-VIS Day
 - Analyse en Géodésiques Principales d'Arbres de Fusion (et de Diagrammes de Persistance)
Jun. 23rd, Journée APR
 - Analyse en Géodésiques Principales d'Arbres de Fusion (et de Diagrammes de Persistance)
Jun. 22nd, Journée Visu
 - Analyse en Géodésiques Principales d'Arbres de Fusion (et de Diagrammes de Persistance)
Jun. 8th, CORESA – Best Paper and Presentation Award!
- 2022
- Distances de Wasserstein, Géodésiques et Barycentres d'Arbres de Fusion
Nov. 25th, JFIG
 - Tutorial: Wasserstein Distances, Barycenters and Clusters of Merge Trees in TTK
Oct. 17th, IEEE VIS, Recorded Talk
 - Distances de Wasserstein, Géodésiques et Barycentres d'Arbres de Fusion
Jun. 28th, Journée Visu
- 2021
- Wasserstein Distances, Geodesics and Barycenters of Merge Trees
Oct. 28th, IEEE VIS, Recorded Talk

Teaching Experience

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|-------------|---|
| 2022 – 2023 | <ul style="list-style-type: none"> • Introduction to Programming 1
~ 40h in Bachelor 1 using Python • Data Structures
~ 20h in Bachelor 2 using C |
| 2021 – 2022 | <ul style="list-style-type: none"> • Introduction to Programming 1
~ 40h in Bachelor 1 using Python • Introduction to Scientific Visualization
~ 20h in Master 2 using C++ and ParaView |
| 2020 – 2021 | <ul style="list-style-type: none"> • Introduction to Scientific Visualization
~ 20h in Master 2 using C++ and ParaView • Introduction to Programming 2
~ 40h in Bachelor 1 using C |