Mathieu Pont

Post-doctoral Researcher

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0000-0002-0037-0314 RPTU Kaiserslautern-Landau, Scientific Visualization Lab, Germany.

Work Experience

Oct. 2024 – Ongoing
Post-doctoral Position
RPTU Kaiserslautern-Landau, Germany (Scientific Visualization Lab).

Dec. 2023 – Sep. 2024
Post-doctoral Position
CNRS and Sorbonne Université (LIP6).

2020 (6 months)
Master 2 Research Intern
CNRS and Sorbonne Université (LIP6).
Title: *Topologically Discriminant Metric.*
Advisor: *Julien Tierny.*

2019 (3 months)
Master 1 Research Intern
Paris Descartes University (LIPADE).
Title: *Biomedical Corpus Analysis.*
Advisor: *Séverine Affeldt.*

2018 (3 months)
Bachelor Research Intern
Toulouse Paul Sabatier University (IRIT).
Title: *Comparison of Deep Reinforcement Learning methods with an existing Multi-Agent System.*
Advisors: *Frédéric Migeon and Jêrome Mengin.*

2016 (3 months)
DUT Research Intern
ISAE-Supaero.
Title: *Server Room Thermal Monitoring and Evaluation of EV3 Robotic Kit.*
Advisors: *Régine Leconte and Jean-François Dassieu.*

Education

Oct. 2020 – Nov. 2023
Ph.D. in Computer Science
CNRS and Sorbonne Université (LIP6).
Title: *Analysis of Ensembles of Topological Descriptors.*
Advisor: *Julien Tierny.*

2018 – 2020
Master's Degree in Computer Science
"*Machine Learning for Data Science*" *track of Paris Descartes University.*
Rank: *1 / 38 (S4) ; 1 / 37 (S3) ; 1 / 33 (S2) and 3 / 33 (S1)*

2016 – 2018
Bachelor's Degree in Computer Science
Toulouse Paul Sabatier University.
Rank: *4 / 152*

2014 – 2016
DUT GEII (Electrical and Computer Science Engineering)
Toulouse Paul Sabatier University.

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 Durrleman (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 Wetzels, 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 Wetzels
  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

2024

- **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
- **Principal Geodesic Analysis of Merge Trees (and Persistence Diagrams)**
  Oct. 16th, Pre-VIS Day

2023 (continued)

- **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

2022 – 2023

- **Introduction to Programming 1**
  $\sim 40h$ *in Bachelor 1 using Python*
- **Data Structures**
  $\sim 20h$ *in Bachelor 2 using C*

2021 – 2022

- **Introduction to Programming 1**
  $\sim 40h$ *in Bachelor 1 using Python*
- **Introduction to Scientific Visualization**
  $\sim 20h$ *in Master 2 using C++ and ParaView*

2020 – 2021

- **Introduction to Scientific Visualization**
  $\sim 20h$ *in Master 2 using C++ and ParaView*
- **Introduction to Programming 2**
  $\sim 40h$ *in Bachelor 1 using C*