

Mathieu Pont

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Work Experience

2023 – Ongoing	Post-doctoral Position <i>CNRS and Sorbonne Université (LIP6).</i>
2020 (6 months)	Master 2 Intern <i>CNRS and Sorbonne Université (LIP6).</i> Title: <i>Topologically Discriminant Metric.</i> Advisor: <i>Julien Tierny.</i>
2019 (3 months)	Master 1 Intern <i>Paris Descartes University (LIPADE).</i> Title: <i>Biomedical Corpus Analysis.</i> Advisor: <i>Séverine Affeldt.</i>
2018 (3 months)	Bachelor 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 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

2020 – 2023	PhD 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>

Research

Publications

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|------|---|
| 2023 | <ul style="list-style-type: none">• Wasserstein Auto-Encoders of Merge Trees (and Persistence Diagrams)
Mathieu Pont and Julien Tierny
<i>IEEE Transactions on Visualization and Computer Graphics</i>
To be presented at IEEE VIS 2024• Merge Tree Geodesics and Barycenters with Path Mappings
Florian Wetzels, Mathieu Pont, Julien Tierny and Christoph Garth
<i>IEEE Transactions on Visualization and Computer Graphics</i>
Proc. of IEEE VIS 2023
Best Paper Honorable Mention |
| 2022 | <ul style="list-style-type: none">• Principal Geodesic Analysis of Merge Trees (and Persistence Diagrams)
Mathieu Pont, Jules Vidal and Julien Tierny
<i>IEEE Transactions on Visualization and Computer Graphics</i>
Presented at IEEE VIS 2023 |
| 2021 | <ul style="list-style-type: none">• Wasserstein Distances, Geodesics and Barycenters of Merge Trees
Mathieu Pont, Jules Vidal, Julie Delon and Julien Tierny
<i>IEEE Transactions on Visualization and Computer Graphics</i>
Proc. of IEEE VIS 2021 |

Thesis

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| 2023 | <ul style="list-style-type: none">• Analysis of Ensembles of Topological Descriptors
Mathieu Pont
Ph.D. thesis
Committee: <i>Gabriel Peyré (president of the jury), David Coeurjolly (reviewer), Vijay Natarajan (reviewer), Elsa Cazelles (examiner), Stanley Durrleman (examiner), Roland Kwitt (examiner), Katharine Turner (examiner), Julien Tierny (advisor)</i> |
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Technical Reports

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| 2023 | <ul style="list-style-type: none">• A Hands-on TTK Tutorial for Absolute Beginners
Christoph Garth, Robin Maack, Mathieu Pont, Julien Tierny, Bei Wang, Florian Wetzels, Michael Will
<i>IEEE VIS Tutorials 2023</i> |
| 2022 | <ul style="list-style-type: none">• 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, Florian Wetzels
<i>IEEE VIS Tutorials 2022</i> |

Professional Service

Reviewer

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

Awards

2023

- **Best Paper Honorable Mention** 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)"

Talks

2023

- **Analysis of Ensembles of Topological Descriptors**
Dec. 1st, PhD 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
- **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**
~ 40h in Bachelor 1 using Python
- **Data Structures**
~ 20h in Bachelor 2 using C

2021 – 2022

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

2020 – 2021

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