

Romain Loiseau

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loiseau

Romain Loiseau

PhD Student



Summary I am a PhD student at the École des Ponts ParisTech in the computer vision team IMAGINE (LIGM, École des Ponts, Univ Gustave Eiffel, CNRS) and at the IGN—the French Mapping Agency—in the machine learning team STRUDEL (LASTIG, Univ Gustave Eiffel, IGN/ENSG), advised by Mathieu Aubry and Loïc Landrieu. I am interested in optimisation and machine learning for large-scale real-world 3D data, with a focus on unsupervised learning, interpretability, and real-time applications.

Positions

2020 – present : PhD student, LIGM, École des Ponts - LASTIG, IGN/ENSG

Efficient and interpretable learning for large-scale real-world 3D data

Advisors: Mathieu Aubry and Loïc Landrieu

2020 – present : Ingénieur des Ponts, des Eaux et des Forêts, MTE

Civil servant for the French Ministry of Ecological Transition

2020 : IPEF Intern, CGDD, French Ministry of Environment

6 months

Strategy of the *French assessment of ecosystems and ecosystemic services*

2019 : Research Intern, General Electric Healthcare

7 months

Adversarial learning for CT and MRI medical imaging

2018 : Research Intern, Bentley Systems

6 months

Large scale 3D semantic segmentation with deep neural networks

Advisor: Renaud Keriven

2017 : Intern, Arara Chile

3 months

Machine learning projects & Machine learning instructor

2015 : Military Service as Officer Cadet, Autun's Military School

6 months

Section chief & Scientific teacher

Education

2019 - 2020 : École des Ponts ParisTech - Agro ParisTech, MS

Paris, France

MS PAPDD: policies and public action for sustainable development

2018 - 2019 : ENS Cachan, MSc

Paris, France

Master MVA: machine learning and computer vision

2018 - 2019 : École des Ponts ParisTech, MSc

Paris, France

Master IMI: computer science and applied mathematics

2015 - 2019 : École Polytechnique, MSc

Paris, France

Engineering school: algorithmic, applied mathematics and biology

2013 - 2015 : Stanislas High School

Paris, France

Preparation course for exams to enter French engineering schools

2010 - 2013 : Bonaparte High School

Doha, Qatar

High School Diploma with honours, specialised in Sciences

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Research Experience

Publications

- **2022, ECCV: Romain Loiseau**, Mathieu Aubry, Loic Landrieu, *Online Semantic Segmentation of LiDAR Sequences: Dataset and Algorithm*.
- **2022, ISMIR: Romain Loiseau**, Baptiste Bouvier, Yann Teytaut, Elliot Vincent, Mathieu Aubry, Loic Landrieu, *A Model You Can Hear: Audio Identification With Playable Prototypes*.
- **2022, CVPRw - Transformers for Vision: Romain Loiseau**, Mathieu Aubry, Loic Landrieu, *Helix4D: Online Semantic Segmentation of LiDAR Sequences*.
- **2022, CVPRw - Sight and Sound: Romain Loiseau**, Baptiste Bouvier, Yann Teytaut, Elliot Vincent, Mathieu Aubry, Loic Landrieu, *A Model You Can Hear: Audio Classification with Playable Prototype*.
- **2021, 3DV: Romain Loiseau**, Tom Monnier, Mathieu Aubry, Loic Landrieu, *Representing Shape Collections with Alignment-Aware Linear Models*.

Research Expertise

- **Reviewing:** CVPR 2023, ISPRS Journal 2022, 3DV 2022, ECCV 2022, CVPR T4V Workshop 2022, CVPR Earth Vision Workshop 2022, ISPRS 2022, CVIU 2021-22
- **Organizing:** LASTIG Machine Learning and Computer Vision for remote sensing reading group, 30+ presentations in 2022-23

Teaching

- 2022 : ENSG-IGN, *Course Instructor* (M2-18 hours)
Deep Learning for Remote Sensing
- 2022 : ENPC, *Course Instructor* (L3-15 hours)
Computer Vision for Mechanics of Materials
- 2022 : ENSG-IGN, *Course Instructor* (M2-6 hours)
Deep Learning for Satellite Images

Open-source repositories

- 🐙 [romainloiseau/deep-linear-shapes](https://github.com/romainloiseau/deep-linear-shapes) 27 ★ 2 📄
- 🐙 [romainloiseau/Helix4D](https://github.com/romainloiseau/Helix4D) 44 ★ 5 📄
- 🐙 [romainloiseau/HelixNet](https://github.com/romainloiseau/HelixNet) 39 ★ 2 📄
- 🐙 [romainloiseau/a-model-you-can-hear](https://github.com/romainloiseau/a-model-you-can-hear) 28 ★ 0 📄

Public datasets

- **HelixNet:** 10B annotated 3D points captured by a moving vehicle for autonomous driving, with Loic Landrieu. 391 📄

Talks in Conferences and Invited Talk

🗣️ oral 🎓 tutorial 🖼️ poster

2022

- 🗣️ **ISMIR**, Belanguru, India, poster
A Model You Can Hear: Audio Identification With Playable Prototypes.
- 🗣️ **GTTI, Centre Borelli**, Paris, France, invited talk
Real-Time LiDAR Segmentation & Representing Large Shape Collections.
- 🗣️ **Bundesamt für Kartographie und Geodäsie (BKG)**, spotlight
Deep Learning for 3D data at IGN.
- 🖼️ **ECCV**, Tel-Aviv, Israël, poster
Online Segmentation of LiDAR Sequences: Dataset and Algorithm.
- 🗣️ **ALLEGRIA seminar, CEA-ISAS**, Paris, France, invited talk
Real-Time LiDAR Segmentation & Representing Large Shape Collections.
- 🗣️ **Willow, INRIA**, Paris, France, invited talk
Real-Time LiDAR Segmentation & Representing Large Shape Collections.

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- 🏠 **Vision and Sports Summer School**, Prague, Czech Republic, poster
Online Segmentation of LiDAR Sequences: Dataset and Algorithm.
- 🎤 **CVPR - Transformer for Vision Workshop**, New-Orleans, US, spotlight
Helix4D: Online Semantic Segmentation of LiDAR Sequences.
- 🎤 **CVPR - Sight and Sound Workshop**, New-Orleans, US, spotlight
A Model You Can Hear: Audio Classification with Playable Prototypes.
- 🎓 **XXIV ISPRS Congress**, Nice, France, tutorial
Deep Learning for Point Clouds Semantic Segmentation.
- 🏠 **XXIV ISPRS Congress**, Nice, France, poster
Online Segmentation of LiDAR Sequences: Dataset and Algorithm.
- 🏠 **GDR ISIS**, Paris, France, poster
A Model You Can Hear: Audio Classification with Playable Prototypes.
- 🎤 **LIX, École Polytechnique**, Paris, France, invited talk
Representing Large Shape Collections & Real-Time LiDAR Segmentation.
- 🎤 **SAMP.ai**, Paris, France, invited talk
Representing Shape Collections with Alignment-Aware Linear Models.
- 🏠 **IGN-ENSG Research Days**, Paris, France, poster
Representing Shape Collections with Alignment-Aware Linear Models.
- 🎤 **French Ministry of Environment PhD Seminar**, France, oral presentation
Representing Shape Collections & Real-Time Semantic Segmentation of Dynamic
3D Point Clouds for Public Policies.

2021

- 🏠 **3DV**, virtual, poster
Representing Shape Collections with Alignment-Aware Linear Models.
- 🏠 **ICCV - Learning 3D Representations for Shape and Appearance Workshop**, virtual, poster
Representing Shape Collections with Alignment-Aware Linear Models.
- 🎤 **IGN-ENSG Research Days**, virtual, oral presentation
Representing Shape Collections with Alignment-Aware Linear Models.

Skills, Interests and Personal

Machine learning

- Functional optimisation
- Deep learning
- LiDAR data
- 3D data
- Time-sequences
- Interpretable learning
- Unsupervised learning

Computer skills

- 🐍 Python
- 🔥 PyTorch
- 🇨🇵 C++
- ☕ Java
- 🍷 AWS
- 🌀 Git
- 🐧 Linux
- 🏠 HTML/CSS
- \LaTeX

Languages

- 🇫🇷 **French:** Native speaker
- 🇬🇧 **English:** Fluent
- 🇪🇸 **Spanish:** Intermediate

International experience

- **2017:** 🇨🇱 Santiago, Chile
- **2010-2013:** 🇶🇦 Doha, Qatar
- **2003-2006:** 🇳🇮 Port-Harcourt, Nigeria
- **1997-2001:** 🇸🇬 Aberdeen, Scotland

Personal interests

- Choir (bass singer)
- Concert organisation
- Production of an album
- Graphic design