

Romain Loiseau

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# Romain Loiseau

## PhD Student – Deep Learning for 3D data

**Summary** I am a PhD student at the École des Ponts 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 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**

Real-time semantic segmentation of dynamic 3D point clouds

**Advisors:** Mathieu Aubry and Loïc Landrieu

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

**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

## Research Experience

### Publications

- **2021, 3DV** : Romain Loiseau, Tom Monnier, Mathieu Aubry, Loic Landrieu, *Representing Shape Collections with Alignment-Aware Linear Models.*

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## Reviewing & Expertise

- **Reviewing:** CVPRW Earth Vision 2022, ISPRS 2022, CVIU 2021

## 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

## Open-source repositories

-  romainloiseau/deep-linear-shapes 22 ★ 0 🍴
-  romainloiseau/Helix4D (to come)
-  romainloiseau/HelixNet (to come)
-  romainloiseau/fast-gpu-lovasz (to come)



## Public datasets

- **HelixNet:** 10B annotated 3D points captured by a moving vehicle for autonomous driving, with Loïc Landrieu. (to come)




## Talks in Conferences and Invited Talk

 oral  poster

### 2022

-  **IGN-ENSG Research Days**, poster  
Representing Shape Collections with Alignment-Aware Linear Models
-  **French Ministry of Environment PhD Seminar**, 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
-  **ICCVW - Learning 3D Representations for Shape and Appearance**, 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

### Computer science

- Python
- PyTorch
- C++
- $\LaTeX$

### 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