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Damien Robert

Deep Learning for Remote Sensing & Environment

Summary   I am a postdoctoral researcher in the EcoVision lab at University of Zurich, collaborating with Jan D. Wegner. I am broadly interested in deep learning for real-world data and impactful applications, with a taste for approaches making deep learning research socially and environmentally beneficial, accessible and reproducible. My recent work focuses on efficient and scalable deep learning, forest structure analysis, and species distribution modeling.

Positions

2024 – Now : *Postdoctoral Researcher,* **EcoVision lab, University of Zurich**
Deep learning for remote sensing and environment
PI: Jan D. Wegner

2020 – 2024 : *PhD student,* **ENGIE Lab CRIGEN - LASTIG, IGN/ENSG**　　*3y 4m*
Efficient learning on large-scale 3D point clouds
Advisors: Loïc Landrieu and Bruno Vallet

2017 - 2020 : *R&D Engineer,* **SIRADEL, ENGIE**　　*2y 8m*
Deep Learning on large-scale, terrestrial/aerial, indoor/outdoor 3D/2D data

2017 : *Co-Founder,* **Inspirama**　　*1y*
Website gathering book recommendations from inspiring people

2015 : *R&D Intern,* **Dassault Systemes**　　*6m*
Dimensionality reduction and dynamic system modeling

2014 : *R&D Intern,* **Dassault Systemes**　　*6m*
UX design

Education

2022 : International Computer Vision Summer School　　*Sicily, Italy*
CV courses by world-renowned experts in academia and industry

2011 - 2015 : Ecole Centrale Lyon, MSc　　*Lyon, France*
Mathematics, Computer Science, Mechanics, Signal Processing, Automation

2017 : CNRS AI Fall School　　*Lyon, France*
Multi-disciplinary course for AI students and researchers

2017 : Udacity, Machine Learning Engineer Nanodegree　　*MOOC*
Machine learning, mathematics, computer science

2015 : Coursera　　*MOOC*
Introduction to Machine Learning

2009 - 2011 : Chateaubriand High School　　*Rennes, France*
Preparation course for exams to enter French engineering schools

2006 - 2009 : Victor & Helene Basch High School　　*Rennes, France*
High School Diploma with honours, specialized in Sciences and English

Research Experience

📄 Publications

2026

arxiv: Martin Schwartz, Fajwel Fogel, Nikola Besic, <u>Damien Robert</u>, Louis Geist, Jean-Pierre Renaud, Jean-Matthieu Monnet, Clemens Mosig, Cédric Vega, Alexandre d'Aspremont, Loic Landrieu, Philippe Ciais, *FORMSpoT: A Decade of Tree-Level, Country-Scale Forest Monitoring*

arxiv: Yuanwen Yue, <u>Damien Robert</u>, Jianyuan Wang, Sunghwan Hong, Jan Dirk Wegner, Christian Rupprecht, Konrad Schindler *LitePT: Lighter Yet Stronger Point Transformer*

ICRA: Louis Geist, Loic Landrieu, <u>Damien Robert</u>, *EZ-SP: Fast and Lightweight Superpoint-Based 3D Segmentation*

2025

PFG–Journal of Photogrammetry, Remote Sensing and Geoinformation Science: Kaan Karaman, Vivien Sainte Fare Garnot, <u>Damien Robert</u>, Maria João Santos, Jan Dirk Wegner, *MT-GSR4B: Multi-Temporally Guided Super-Resolution for Above-Ground Biomass Estimation*

CVPR workshop EarthVision: Elena Plekhanova, <u>Damien Robert</u>, Johannes Dollinger, Emilia Arens, Philipp Brun, Jan Dirk Wegner, Niklaus Zimmermann, *SSL4Eco: A Global Seasonal Dataset for Geospatial Foundation Models in Ecology*

ISPRS Geospatial Week Oral: Kaan Karaman, Yuchang Jiang, <u>Damien Robert</u>, Vivien Sainte Fare Garnot, Maria João Santos, Jan Dirk Wegner, *GSR4B: Biomass Map Super-Resolution with Sentinel-1/2 Guidance*

ICLR workshop Tackling Climate Change with Machine Learning: Johannes Dollinger, <u>Damien Robert</u>, Elena Plekhanova, Lukas Drees, Jan Dirk Wegner, *Climplicit: Climatic Implicit Embeddings for Global Ecological Tasks*

IEEE Geoscience and Remote Sensing Magazine: Carlos Gomes, Isabelle Wittmann, <u>Damien Robert</u>, et al., *Lossy neural compression for geospatial analytics: A review*

2024

PhD Thesis: <u>Damien Robert</u>, *Efficient Learning on Large-Scale 3D Point Clouds*. **Jury**: Sébastien Lefèvre, Cédric Demonceaux, Patrick Pérez, Siyu Tang, Duygu Ceylan, Loic Landrieu, Bruno Vallet

3DV Oral (top 5.3% submissions): <u>Damien Robert</u>, Hugo Raguet, Loic Landrieu, *Scalable 3D Panoptic Segmentation as Superpoint Graph Clustering*

2023

ICCV (top 26.8% submissions): <u>Damien Robert</u>, Hugo Raguet, Loic Landrieu, *Efficient 3D Semantic Segmentation with Superpoint Transformer*

2022

CVPR Best paper finalist (top 0.4% submissions): <u>Damien Robert</u>, Bruno Vallet, Loic Landrieu, *Learning Multi-View Aggregation In the Wild for Large-Scale 3D Semantic Segmentation*

🏅 Awards

2025
AFRIF PhD award accessit

2024
ECCV outstanding reviewer

2022
CVPR best paper shortlist

👩‍🏫 Collaboration & Supervision

PhD Students

Emilia Arens with Jan D. Wegner (UZH)
Johannes Dollinger with Jan D. Wegner (UZH)
Kaan Karaman with Jan D. Wegner (UZH)
Louis Geist with Loic Landrieu (ENPC)
Yuanwen Yue with Konrad Schindler (ETH) and Christian Rupprecht (Oxford)

Master Students
Valerio Schelbert (ETH)
Jackson Sunny (Polytechnique) with SAMP

Researchers
Konrad Schindler (ETH)
Christian Rupprecht (Oxford)
Jan D. Wegner (UZH)
Loic Landrieu (ENPC)
Vivien Sainte Fare Garnot (UZH)
Lukas Drees (UZH)
Martin Schwartz (LSCE)
Elena Plekhanova (WSL)

Scientific Advising
UpCircle AI (Switzerland)
Ecole des Sciences Criminelles de Lausanne (Switzerland)
SAMP AI (France)
GEODIGITAL (US)

🔖 Reviewing & Chairing

2026
CVPR, ECCV Area Chair

2025
CVPR, CVPR workshop EarthVision

2024
ISPRS Journal of Photogrammetry and Remote Sensing, ICLR workshop ML4RS, ECCV (outstanding reviewer), CVPR workshop EarthVision

2023
CVPR, CVPR workshop EarthVision

2022
ISPRS Journal of Photogrammetry and Remote Sensing, CVPR workshop EarthVision

👩‍🏫 Teaching

2026 : UZH   *(M2)*
Lecture on Attention

2025 : UZH   *(M2)*
Lecture on Attention & AI4Good group projects

2024 : UZH   *(M2)*
Lecture and labs on Attention, NeRFs, and Diffusion

2023 : ENSG-IGN   *(M2)*
Lecture and labs on Deep Learning for Remote Sensing

2022 : XXIV ISPRS Congress   *(Researchers)*
Tutorial on Deep Learning for Remote Sensing

2022 : ENGIE CRIGEN lab *(Researchers)*
Tutorial on 3D Deep Learning, Torch-Points3D & DeepViewAgg

2022 : ENSG-IGN *(M2)*
Lecture and labs on Deep Learning for Remote Sensing

2020 : Ecole Polytechnique *(M1)*
Lecture on Deep Learning for Computer Vision

🔘 Open-Source Repositories

drprojects/superpoint_transformer	945 ★	123 ⑂
drprojects/deepviewagg	234 ★	24 ⑂
drprojects/point_geometric_features	71 ★	7 ⑂
drprojects/nora	50 ★	2 ⑂
drprojects/torch-graph-components	20 ★	

Conferences and Invited Talks

✏️ Conference oral   🖼️ Poster   🎙️ Invited talk   👨🏽‍💼 Interview

2025

🎙️ **Max Planck Institute of Animal Behavior** *Zurich, Switzerland*
Research at EcoVision lab

🎙️ **Global Forest Watch** *Virtual*
Geospatial foundation models for forest disturbance monitoring

🎙️ **ETH Zurich, Plant Ecology** *Zurich, Switzerland*
Research at EcoVision lab

🖼️ **AI4EO** *Rennes, France*
SSL4Eco: A Global Seasonal Dataset for Geospatial Foundation Models in Ecology

🖼️ **CVPR EarthVision** *Nashville, US*
SSL4Eco: A Global Seasonal Dataset for Geospatial Foundation Models in Ecology

🎙️ **NatureFinance** *Virtual*
Research at EcoVision lab

🎙️ **Unil., Institute for Forensic Science** *Virtual*
Superpoint Transformer

🎙️ **COMET TSI (CNES)** *Virtual*
Remote Sensing for Species Distribution Modeling

🎙️ **WSL Dynamic Ecology** *Zurich, Switzerland*
Research at EcoVision lab

2024

🎙️ **Samp R&D lab** *Paris, France*
SuperCluster

👨🏽‍💼 **3D Data Academy** *YouTube*
Interview by Florent Poux and tutorial for Superpoint Transformer

🎙️ **Una Europa** *Zurich, Switzerland*
Research at EcoVision lab

🎙️ **Google DeepMind** *Zurich, Switzerland*
Research at EcoVision lab

🎙️ **GeoDigital** *Virtual*
Superpoint Transformer

✏️ **3DV** *Davos, Switzerland*
Scalable 3D Panoptic Segmentation as Superpoint Graph Clustering

🎙 **IGN** *Paris, France*

PhD defense

2023

🎙 **National Land Survey of Finland (NLS)** *Paris, France*

Presenting IGN's research on large-Scale 2D and 3D Learning

🎙 **Ecole des Ponts, IMAGINE lab** *Paris, France*

Efficient Learning on Large-Scale 3D Point Clouds

🖼 **ICCV** *Paris, France*

Efficient 3D Semantic Segmentation with Superpoint Transformer

🎙 **ETH Zurich, Computer Vision and Geometry lab** *Zurich, Switzerland*

Efficient Learning on Large-Scale 3D Point Clouds

🎙 **ETH Zurich, Photogrammetry and Remote Sensing lab** *Zurich, Switzerland*

Efficient Learning on Large-Scale 3D Point Clouds

🎙 **ENGIE CRIGEN lab** *Paris, France*

Efficient 3D Semantic Segmentation with Superpoint Transformer

🎙 **Samp R&D lab** *Paris, France*

Efficient 3D Semantic Segmentation with Superpoint Transformer

🎙 **University of Zurich, EcoVision lab** *Virtual*

Efficient 3D Semantic Segmentation with Superpoint Transformer

🎙 **Valeo.ai** *Paris, France*

Efficient 3D Semantic Segmentation with Superpoint Transformer

2022

🎙 **IGN, LASTIG lab** *Paris, France*

Self-Supervised Learning for Computer Vision

🎙 **Bundesamt für Kartographie und Geodäsie (BKG)** *Paris, France*

Presenting IGN's research on Large-Scale 2D and 3D Learning

🖼 **International Computer Vision Summer School** *Sicily, Italy*

Learning Multi-View Aggregation In the Wild for Large-Scale 3D Semantic Segmentation

👨‍💼 **CV News** *New Orleans, US*

Interviewed by the CV News journal for its *Best of CVPR'22* issue

🖌 **CVPR** *New Orleans, US*

Learning Multi-View Aggregation In the Wild for Large-Scale 3D Semantic Segmentation

🎙 **Ecole des Ponts, IMAGINE lab** *Paris, France*

Learning Multi-View Aggregation In the Wild for Large-Scale 3D Semantic Segmentation

🖼 **XXIV ISPRS Congress** *Nice, France*

Learning Multi-View Aggregation In the Wild for Large-Scale 3D Semantic Segmentation

🎙 **Ecole Polytechnique, LIX lab** *Paris, France*

Learning Multi-View Aggregation In the Wild for Large-Scale 3D Semantic Segmentation

🎙 **AI4GEO project seminar** *Virtual*

Learning Multi-View Aggregation In the Wild for Large-Scale 3D Semantic Segmentation

🖼 **IGN-ENSG Research Days** *Paris, France*

Learning Multi-View Aggregation In the Wild for Large-Scale 3D Semantic Segmentation

🎙 **GDR ISIS seminar** *Virtual*

Learning Multi-View Aggregation In the Wild for Large-Scale 3D Semantic Segmentation

2021

🎙 **IGN-ENSG Research Days** *Virtual*

Multimodal learning on point clouds and images

Skills, Interests, and Personal

Research Topics

- Computer vision
- Deep learning
- LiDAR data
- Large-scale 3D data
- Multimodal learning
- Efficient learning
- Superpoint-based learning
- Graph-based learning
- Graph partitioning
- Self-supervised learning
- Remote sensing
- Forest structure analysis
- Species distribution modeling
- Representation learning for macroecology
- EO data representation and compression

Tools

- Python
- PyTorch
- PyTorch Lightning
- PyTorch Geometric
- Hydra
- scikit-learn
- Plotly
- Weights & Biases
- Blender
- C++
- Git
- Latex
- Linux

Languages

French	Native
English	Fluent
Spanish	Intermediate
German	Beginner

International Experience

2024-*Now*	Zurich
2015-2016	Backpacking
2014-2015	Providence, RI

Personal Interests

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