Damien Robert

Deep Learning for Remote Sensing & Environment

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I am a postdoctoral researcher in the EcoVision lab at the University of Zurich, where I collaborate with Jan Dirk Wegner to design deep learning methods for remote sensing and environmental applications. Before joining UZH, I completed my PhD on *"Efficient Learning on Large-Scale 3D Point Clouds"* at IGN and ENGIE, under the supervision of Loic Landrieu and Bruno Vallet, for which I received the AFRIF 2024 PhD Award accessit.

deep learning · efficient ML · graphs for 3D point clouds · remote sensing · vegetation mapping · species distribution

POSITIONS

2024–now
Postdoctoral Researcher
EcoVision lab, University of Zurich · Zurich, Switzerland
Deep learning for remote sensing and environment
PI: Jan Dirk Wegner

2020–2024
PhD Student
LASTIG, IGN / ENGIE Lab CRIGEN · Paris, France
Efficient learning on large-scale 3D point clouds
Advisors: Loic Landrieu, Bruno Vallet

2017–2020
R&D Engineer
SIRADEL, ENGIE / ENGIE · Rennes, France
Deep learning on large-scale terrestrial/aerial, indoor/outdoor 3D and 2D data

2017
Co-Founder
Inspirama · Rennes, France
Website gathering book recommendations from inspiring people

2015
R&D Intern
Dassault Systèmes · Providence, RI, USA
Dimensionality reduction and dynamic system modeling

2014
R&D Intern
Dassault Systèmes · Providence, RI, USA
UX design

2014
R&D Intern
Dassault Systèmes · Providence, RI, USA
UX design

EDUCATION

2020–2024
PhD, Computer Science
Université Gustave Eiffel · Paris, France
Efficient Learning on Large-Scale 3D Point Clouds

2022
Summer School
ICVSS · Sicily, Italy
Computer vision courses by world-renowned experts in academia and industry

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

2011–2015
MSc, Engineering
École Centrale de Lyon · Lyon, France
Mathematics, Computer Science, Mechanics, Signal Processing, Automation

AWARDS

2026 **Outstanding Reviewer** · CVPR

2025 **PhD Award accessit** · AFRIF
French Association for Pattern Recognition and Interpretation

2024 **Outstanding Reviewer** · ECCV

2022 **Best Paper Finalist** · CVPR
Top 0.4% of submissions

PUBLICATIONS

487 citations · h-index 7 · Google Scholar, Sep 2026

2026 **Atomizer-IO: Beyond Pixels, Patches and Grids**
H. Riffaud de Turckheim, S. Lobry, N. Houdré, **D. Robert**, R. Interdonato, D. Marcos
Under review

MALiBU3D: A Multitask Aerial LiDAR Benchmark for Large-Scale 3D Scene Understanding
L. Geist, E. Vincent, M. A. Chebbi, A. Garioud, N. Gonthier, S. Giordano, N. David, J. D. Wegner, L. Landrieu, **D. Robert**
Under review

ForPT: Toward a foundation model for forest point clouds
Y. Yue, S. Puliti, **D. Robert**, A. Topaloğlu, B. Xiang, M. Wielgosz, J. D. Wegner, R. Astrup, C. Rupprecht, K. Schindler
Under review

From Machine Learning to Large-Scale EO Products: Best Practices for Making Maps
G. Sialelli, R. Young, Y. Jiang, …, **D. Robert**, et al. (13 authors)
Under review

SAGE: A sampling-aware global evaluation benchmark for species distribution modeling
E. Arens, N. van Tiel, R. Zbinden, **D. Robert**, L. Drees, C. Vanalli, B. Kellenberger, N. Zimmermann, L. Pellissier, D. Tuia, J. D. Wegner
Under review

LitePT: Lighter Yet Stronger Point Transformer
Y. Yue, **D. Robert**, J. Wang, S. Hong, J. D. Wegner, C. Rupprecht, K. Schindler
CVPR Highlight

EZ-SP: Fast and Lightweight Superpoint-Based 3D Segmentation
L. Geist, L. Landrieu, **D. Robert**
ICRA

FORMSpoT: Revealing fine-scale forest disturbances from nation-wide 1.5 m forest canopy height time series
M. Schwartz, F. Fogel, N. Besic, **D. Robert**, L. Geist, J. Renaud, J. Monnet, C. Mosig, C. Vega, A. d'Aspremont, L. Landrieu, P. Ciais
Remote Sensing of Environment

2025 **MT-GSR4B: Multi-Temporally Guided Super-Resolution for Above-Ground Biomass Estimation**
K. Karaman, V. S. F. Garnot, **D. Robert**, M. J. Santos, J. D. Wegner
PFG – Journal of Photogrammetry, Remote Sensing and Geoinformation Science

SSL4Eco: A Global Seasonal Dataset for Geospatial Foundation Models in Ecology
E. Plekhanova, **D. Robert**, J. Dollinger, E. Arens, P. Brun, J. D. Wegner, N. Zimmermann
CVPR workshop EarthVision

GSR4B: Biomass Map Super-Resolution with Sentinel-1/2 Guidance
K. Karaman, Y. Jiang, **D. Robert**, V. S. F. Garnot, M. J. Santos, J. D. Wegner
ISPRS Geospatial Week Oral

Climplicit: Climatic Implicit Embeddings for Global Ecological Tasks
J. Dollinger, **D. Robert**, E. Plekhanova, L. Drees, J. D. Wegner
ICLR workshop Tackling Climate Change with Machine Learning

Lossy Neural Compression for Geospatial Analytics: A Review
C. Gomes, I. Wittmann, **D. Robert**, et al. (27 authors)
IEEE Geoscience and Remote Sensing Magazine

2024 **Efficient Learning on Large-Scale 3D Point Clouds**
D. Robert

PhD Thesis, Université Gustave Eiffel AFRIF PhD award accessit
Jury: Sébastien Lefèvre, Cédric Demonceaux, Patrick Pérez, Siyu Tang, Duygu Ceylan, Loic Landrieu, Bruno Vallet

Scalable 3D Panoptic Segmentation as Superpoint Graph Clustering
D. Robert, H. Raguet, L. Landrieu
3DV Oral · top 5.3% of submissions

2023 **Efficient 3D Semantic Segmentation with Superpoint Transformer**
D. Robert, H. Raguet, L. Landrieu
ICCV · 26.8% acceptance rate

2022 **Learning Multi-View Aggregation In the Wild for Large-Scale 3D Semantic Segmentation**
D. Robert, B. Vallet, L. Landrieu
CVPR Best paper finalist Oral · top 0.4% of submissions

COLLABORATION & SUPERVISION

Collaborators **Konrad Schindler** ETH · **Christian Rupprecht** Oxford · **Jan Dirk Wegner** UZH · **Loic Landrieu** ENPC · **Vivien Sainte Fare Garnot** UZH · **Lukas Drees** UZH · **Martin Schwartz** LSCE · **Elena Plekhanova** WSL

PhD Students **Emilia Arens** UZH with Jan Dirk Wegner · **Johannes Dollinger** UZH with Jan Dirk Wegner · **Kaan Karaman** UZH with Jan Dirk Wegner · **Louis Geist** ENPC with Loic Landrieu · **Yuanwen Yue** ETH with Konrad Schindler and Christian Rupprecht · **Yohann Perron** ENPC with Loic Landrieu

Master Students **Valerio Schelbert** WSL · **Jackson Sunny** École Polytechnique with SAMP

Advising **UpCircle AI** Switzerland · **École des Sciences Criminelles de Lausanne** Switzerland · **SAMP AI** France · **GEODIGITAL** US

REVIEWING, CHAIRING & ORGANISING

Reviewer Area chair Organising committee

2027 Organising committee: CVPR workshop EarthVision · Reviewer: 3DV
2026 Area chair: ECCV · Reviewer: CVPR · Reviewer: EurIPS workshop REO
2025 Reviewer: CVPR · Reviewer: CVPR workshop EarthVision
2024 Reviewer: ECCV · Reviewer: ISPRS Journal · Reviewer: ICLR workshop ML4RS · Reviewer: CVPR workshop EarthVision
2023 Reviewer: CVPR · Reviewer: CVPR workshop EarthVision
2022 Reviewer: ISPRS Journal · Reviewer: CVPR workshop EarthVision

TEACHING

2026 **AI4Good group projects** · UZH · Labs, Master 2
2026 **Transformer** · UZH · Lecture, Master 2
2025 **AI4Good group projects** · UZH · Labs, Master 2
2025 **Transformer** · UZH · Lecture, Master 2
2024 **Transformer, NeRFs, and Diffusion** · UZH · Lecture and labs, Master 2
2023 **Deep Learning for Remote Sensing** · ENSG-IGN · Lecture, Master 2
2022 **3D Deep Learning for Remote Sensing** · ISPRS'22 · Tutorial, Researchers
2022 **3D Deep Learning, Torch-Points3D & DeepViewAgg** · ENGIE CRIGEN lab · Tutorial, Researchers
2022 **Deep Learning for Remote Sensing** · ENSG-IGN · Lecture, Master 2
2020 **Deep Learning for Computer Vision** · École Polytechnique · Lecture, Master 1

OPEN-SOURCE SOFTWARE

★ 1067 ⑂ 138 **Superpoint Transformer** · drprojects/superpoint_transformer
★ 443 ⑂ 46 **LitePT** · prs-eth/LitePT
★ 237 ⑂ 24 **DeepViewAgg** · drprojects/DeepViewAgg
★ 75 ⑂ 8 **Point Geometric Features** · drprojects/point_geometric_features
★ 54 ⑂ 3 **NoRA** · drprojects/nora

★ 17 ⑂ 0 **torch-graph-components** · drprojects/torch-graph-components

SELECTED TALKS

Invited · Conference · Poster · Tutorial · Interview

2026 **ESA-NASA workshop on AI Foundation Model for EO** · Building Earth Observation Embedding Workflows with TerraTorch · Virtual

ESA Φ-lab · Geospatial foundation models for forest disturbance monitoring · Frascati, Italy

2025 **MPI of Animal Behavior** · Research at EcoVision lab · Zurich, Switzerland

Global Forest Watch · Geospatial foundation models for forest disturbance monitoring · Virtual

NatureFinance · Research at EcoVision lab · Virtual

NVIDIA Strategic Research Engagement · Superpoint Transformer and EcoVision research · Zurich, Switzerland

CNES COMET TSI · Remote Sensing for Species Distribution Modeling · Virtual

2024 **3D Data Academy** · Interview by Florent Poux and tutorial for Superpoint Transformer · YouTube

Google DeepMind · Research at EcoVision lab · Zurich, Switzerland

3DV'24 · Scalable 3D Panoptic Segmentation as Superpoint Graph Clustering · Davos, Switzerland

2023 **École des Ponts, IMAGINE lab** · Efficient Learning on Large-Scale 3D Point Clouds · Paris, France

National Land Survey of Finland (NLS) · IGN's research on Large-Scale 2D and 3D Learning · Paris, France

ETH Zürich, Computer Vision and Geometry lab · Efficient Learning on Large-Scale 3D Point Clouds · Zurich, Switzerland

ETH Zürich, Photogrammetry and Remote Sensing lab · Efficient Learning on Large-Scale 3D Point Clouds · Zurich, Switzerland

Valeo.ai · Efficient 3D Semantic Segmentation with Superpoint Transformer · Paris, France

2022 **CV News** · Interviewed by the CV News journal for its Best of CVPR'22 issue · New Orleans, US

CVPR'22 · Learning Multi-View Aggregation In the Wild for Large-Scale 3D Semantic Segmentation · New Orleans, US

45 talks given since 2021 — full list at drprojects.github.io/talks.

SKILLS & LANGUAGES

Research

3D & geometry Large-scale 3D point clouds · LiDAR data · Superpoint-based learning · Graph-based learning and graph partitioning

Efficient & scalable learning Efficient deep learning · Scalable model design · EO data representation and compression

Learning paradigms Multimodal learning · Self-supervised learning · Representation learning

Environment & Earth observation Remote sensing · Forest structure analysis · Species distribution modeling · Representation learning for macroecology

Tools

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

Languages: French Native · English Fluent · Spanish Intermediate · German Beginner

Abroad: Zurich, Switzerland 2024–now · Backpacking, Worldwide 2015–2016 · Providence, RI, United States 2014–2015

Interests: Outdoors · Climbing · Skateboarding · Basketball · Guitar · Drawing · Comics · Board games