Luc Vedrenne

ML / DL / CV Ph.D

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PROFESSIONAL EXPERIENCE

Ph.D 2022-2025

ICube, University of Strasbourg

Multi-view registration of highly degraded point clouds using deep learning.

- Robust generative registration algorithm (POLAR), leveraging a pretrained VAE latent space to align highly degraded multi-view point clouds pypolar.github.io/polar
  first-author paper in IEEE Transactions on Image Processing.
- Plug-and-play global optimization framework (GRIP) that transforms any local registration method into a global one for non-convex problems. github.com/pcrresearch/GRIP
- First pure PyTorch implementation of the JRMPC algorithm, ×50 runtime improvement. github.com/pcrresearch/JRMPC-PyTorch-Numpy

Teaching assistant 2022-2025

Telecom Physique Strasbourg

Taught graduate courses in engineering school. Supervised practical sessions for classes of 20–40 students.

- Image processing – Convolution and Fourier analysis, Segmentation, Mathematical morphology, Restoration, Feature detection. vincmazet.github.io/bip
- Random signal processing – Stochastic processes. Sampling and filtering of random signals. Statistical and spectrum estimation.

Research Intern 2021-2022

ICube, Strasbourg

- Developed a weakly supervised deep learning pipeline (positive–unlabeled learning) for particle detection in fluorescence microscopy. Reached fully supervised performances with 500× fewer annotations.
- Collaborated with Prof. Paul Guichard & Dr. Virginie Hamel, University of Geneva.
- Contributed to open-source software for biologists. spfluo-app

Research Intern 2020-2021

Onconeural, Paris

- Lead PyTorch Developer: designed and implemented deep learning pipelines for cancer detection on CT scans.
- Collaborated with Gustave Roussy Hospital, the largest cancer center in Europe.

EDUCATION

MSc. Computer sciences 2017-2020

IMT Atlantique, Brest

Optimization, Information theory, Statistical learning, Computer vision, Deep Learning.
Ranked 1st in *Advanced Data Science in Information Processing*, *Advanced Data Mining*, 2nd in *Artificial Intelligence - Optimized Implementations*, 5th in *Computer Vision*.

BSc. Mathematics & Physics 2014-2017

Lycée Kléber, Strasbourg

Intensive preparation courses for entrance exams to top French engineering schools.
Real analysis, differential equations, linear and general algebra, topology, statistics.

PUBLICATIONS

JOURNALS

Multiview Point Cloud Registration via Optimization in an Autoencoder Latent Space 2025
L. Vedrenne, S. Faisan, D. Fortun
IEEE Transactions on Image Processing (TIP)

CONFERENCES

Optimizing failure mode analysis of dental restorative materials: balancing efficiency and accuracy 2024
B. Cournault, L. Vedrenne, et al.
IEEE International Symposium on Biomedical Imaging (ISBI)

Particle detection based on few shot learning in 3D fluorescence microscopy 2024
L. Vedrenne, E. Baudrier, D. Fortun
IEEE International Symposium on Biomedical Imaging (ISBI)

Fast and interpretable unsupervised domain adaptation for FIB-SEM cell segmentation 2023
A. Stenger, L. Vedrenne, P. Schultz, S. Faisan, E. Baudrier, B. Naegel
IEEE International Symposium on Biomedical Imaging (ISBI)

UNDER REVIEW

Plug-and-Play Global Initializer for Robust and Efficient Point Cloud Registration 2024
L. Vedrenne, D. Fortun, S. Faisan

SKILLS

Programming	Python (expert), PyTorch (expert, since 2017), Jax, MatLab, C++, CUDA, Bash.
Tools	Linux, Git, LaTeX. HPC workflow orchestration with SLURM github.com/ListIndexOutOfRange/Tessti.
Languages	French (mother tongue) English (fluent)

REFERENCES

Available upon request