Gatien CHENU

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PROFESSIONAL EXPERIENCE

École nationale des ponts et chaussées — *Paris, France*

Pre-thesis internship Supervised by Loïc Landrieu — **May 2026 - Now**

- Research on a shared architecture to predict high-res dense prediction from low-res satellite imagery timeseries.

Mozaic Earth — *London, UK*

Applied Machine Learning Engineer — **July 2025 - May 2026**

- Development of a platform to unify satellite imagery and ground-level imagery for biodiversity analysis.
- Proposed an ensemble segmentation framework for biodiversity mapping, tailored to UK Biodiversity Net Gain (BNG) indicators and ecological assessment protocols.
- Evaluated state-of-the-art vision models on satellite and ground-level imagery, analyzing performance across different modalities and regions.

Auvisus — *Karlsruhe, Germany*

Machine Learning Engineer — **March 2024 - April 2025**

- Design of machine learning models for a vision-enabled automatic cashier system.
- Developed and validated an occlusion handling framework for anti-theft scenarios, with a focus on generalization and systematic analysis of failure cases.
- Explored representation learning using small and inference-optimized masked autoencoders (MAE) for food image classification, evaluating accuracy-efficiency trade-offs in constrained inference settings.

Télécom Sud Paris — *Paris-Saclay, France*

Research intern — **June 2023 - August 2023**

- Conducted research on indoor localization using Bluetooth Low Energy (BLE) received signal strength, studying the limitations of RSS-based methods under multipath propagation and dynamic indoor environments.
- Implemented a modular Python research framework for BLE localization experiments, enabling reproducible data processing, spatio-temporal visualization, and quantitative comparison with state-of-the-art algorithms.

iCube — *Strasbourg, France*

Research intern — **June 2022 - July 2022**

- Applied transfer learning with a ResNet architecture to classify 5 bacterial species from microscopy imagery.
- Studied the impact of data augmentation and fine-tuning depth, achieved 93% accuracy.

EDUCATION

Master's Degree: University of Strasbourg *Master of science* — 2022 - 2024

- Master title: *IRIV : Optics, Image, Vision, Multimedia: Images and Data.*
- Remote Sensing, Pattern Recognition, Image Sequence Analysis, Medical Imaging, Bioinformatics & Biostatistics.

***"Grande école d'ingénieur"* : Télécom Physique Strasbourg** *Master of engineering* — 2021 - 2024

- Master title: *Images, Signals and Data Science (ISSD).*
- Computer Vision, Deep Learning, Big Data, Signal Processing, Quantum Mechanics, Optics, Cybersecurity & Robotics.

Preparatory Classes MPSI/MP — 2019 - 2021

- Two-year intensive undergraduate curriculum specializing in high-level Mathematics and Physics, equivalent to 120 ECTS.
- Rigorous preparation for the national competitive entrance exams to the French *"Grandes Écoles"*, representing the top tier of French engineering students.

OPEN SOURCE RESEARCH CONTRIBUTIONS

TorchGeo Contributor

- Contributing to TorchGeo, a PyTorch domain library providing specialized datasets, samplers, and pre-trained models for geospatial machine learning.
- Notably implemented the IGNF FLAIR-HUB dataset, a Large-scale Multimodal Dataset for Land Cover and Crop Mapping, facilitating its accessibility for the broader ML4EO research community. (PR #3181)
- Engineered a robust, 100% tested data pipeline designed for high flexibility. It seamlessly processes diverse inputs, including mono- and multi-temporal observations alongside hierarchical masks for land cover and crop types segmentation.

SKILLS

Languages: French (native), English (bilingual), German (professional proficiency, B2)

Programming Languages: Python (PyTorch & TensorFlow), Typescript/Javascript (React, Angular)

Geospatial Tools: QGIS, Google Earth Engine, Rasterio, GeoPandas

Tools: Databases (SQL, NoSQL - MongoDB), Apache Spark, Git, Docker, Bash, and AWS

Additional Skills: NixOS, GLSL, Design & 3D Printing, Adobe Suite, Arduino & Raspberry Pi Programming

PERSONAL PROJECTS

Urban Vegetation Analysis

- Analysis of the correlation between urban vegetation and the French "Villes et Villages Fleuris" label (discerning the city with important floral displays, the living environment, and green spaces) using Sentinel-2 multi-spectral imagery.
- Development of a geospatial pipeline to automate NDVI extraction and quantify average vegetation density at the municipal scale using open government data.
- Processing and aggregation of satellite and vector data using GeoPandas, Rasterio, and Sentinelhub.

Diffusion Models for Floor Layout

- Research project for the Architectural company Foster + Partners on using diffusion models for floor layout generation.
- Conducted a systematic literature review and theoretical deep-dive into generative diffusion processes to establish a robust foundation for architectural applications.
- Explored the use of BubbleFormer (Sun et al., 2023) for room connection generation and HouseDiffusion (Shaban et al., 2022) for room layout generation.
- Architected a comprehensive development roadmap for a production-ready floor layout generation engine tailored to Foster + Partners' design constraints.

Hackathon participant

- WEkEO Hackathon 2024: Developed a prototype integrating Earth Observation and climate datasets to analyze climate change impacts on global crop planning.
- Alsace Hackathon 2021: Implemented and evaluated a convolutional neural network for bacterial classification from microscopy imagery. Led to my internship at iCube

InsidePSBS - Social media mobile app for students

- Led the development of an Android and iOS application for Télécom Physique Strasbourg using React-Native and Laravel.
- Developed a complete social network platform featuring a news feed, event calendar, payment system, and widgets.
- Achieved high user engagement, with over 350 active users per week.
- Supervised two interns for one month.

MarcoNeo Developer

- Updated a private payment system for 350 users by developing a new interface for Raspberry Pi using Tkinter.
- Installed and configured a Debian web server, ensuring smooth operation. Configured and maintained several Raspberry Pi devices for one year.
- Built and maintained a secure and efficient MariaDB database, administering the server and database.

Freelance 3D Printing

- 3D modeling of the "Manufacture des Tabacs" in SolidWorks
- 3D printing 100 miniature replicas for SERS (Alsatian architectural society)

COMMUNITY ENGAGEMENT

- Active member of the "Info Télécom Strasbourg" organisation: 2021-2024
  Social media communication, web and mobile application development, hosting services and tutoring
- Vice-president in charge of communication within the university association organizing the associative activities of 350 students. 2021-2022
- Student representative on the Board of Directors and against sexual and sexist violence. 2022-2024

HOBBIES

River Kayaking | Climbing | Maker | STEM