Mathias **Villerabel**

Data Scientist & AI engineer

Paris, France

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7+ years across consumer goods, geospatial analytics, and finance. I build reliable ML models and large-scale data pipelines and translate business needs into production systems. Comfortable in multicultural teams (FR/CH/JP)

Skills

Programming	Python, C/C++, Java, Shell, MATLAB, Prolog
Data & ML Libraries	PyTorch, TensorFlow/Keras, scikit-learn, MLflow, Hydra, Poetry, NumPy, Pandas, GeoPandas, rasterio
Big Data & Cloud	PySpark, Palantir Foundry, Google/Azure Cloud
DevOps & Tools	GitHub, CI/CD, Emacs, LaTeX
Databases	SQL, MySQL

Experience

Swiss Re — *Zurich, Switzerland*

Data Scientist — *Sep. 2023 – Present*

- Built an IFRS 17 actuarial/financial simulation engine (cash flows, discounting, Contractual Service Margin) to benchmark EY outputs and ensure regulatory compliance.
- Automated end-to-end reconciliation (GL ↔ actuarial models), cutting manual work from multi-day reviews to < 2 h/run and improving auditability & reproducibility.
- Designed and optimized PySpark pipelines in Palantir Foundry, scaling to 10^9+ accounting records per batch and integrating with downstream financial reporting systems.

Pernod Ricard — *Paris, France*

Data Scientist — *Jan. 2023 – Aug. 2023*

- Developed time-series forecasting and ML models (ARIMA, gradient boosting) and designed a custom PyTorch framework for scalable training/inference.
- Improved 3-month demand forecasts by 12% vs. FA baseline.

Synspective — *Tokyo, Japan*

Research & Applied Scientist — *Dec. 2019 – Jan. 2023*

- Automated detection of new construction from SAR time series (InSAR coherence + intensity), improving urban growth monitoring.
- Delivered a cloud-based Earth observation platform with dynamic caching on Google Cloud, reducing data latency for SDG indicators in economics and environment.
- Built scalable object detection models for maritime trade (containers, cars, trucks, ships); awarded 2nd Prize at the NEDO Challenge.
- Applied Earth observation and machine learning methods during NASA, ESA & JAXA hackathons to address real-world challenges such as wildfire monitoring and prediction.

National Institute of Informatics — *Tokyo, Japan*

Machine Learning Intern — *Mar. 2019 – Aug. 2019*

- Developed action detection models combining MobileNetV2 with segmentation/regression maps and LSTM for temporal recognition.
- Integrated deep learning into UAV systems for search & rescue and surveillance; published in IEEE Access.

Presentation

Google Geo for Good 2021 — *Online*

Presenter — APAC Forest Talk — *2021*

- B2C framework to scale remote-sensing datasets to a large panel of users using Google Earth Engine & a custom Python library.
- link : Geo for Good 2021 — APAC Forest Talk

Writing

UAV-Based Situational Awareness System Using Deep Learning — *IEEE Access (Online)*

Co-author — *2019*

- Presented the PAL system (POINet person detection + ActivityNet action recognition) with Pixel2GPS geolocation; onboard inference on Jetson TX2; field-tested for search & rescue and surveillance.
- IEEE Access — DOI: 10.1109/ACCESS.2019.2938249

Education

Sorbonne University *Paris, France*

M.Sc. in Computer Science *2016 – 2019*

Specialized in machine learning, multi-agent systems, robotics, operational research, and decision theory.

Sorbonne University *Paris, France*

B.Sc. in Computer Science & Mathematics *2013 – 2016*

Coursework included algorithms, statistics, software engineering, networks, and Linux systems.