FLORIAN TESTE

Applied AI Scientist — Geospatial AI (Ph.D.)

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PROFESSIONAL SUMMARY

Applied AI scientist (Ph.D.) combining data science and ML engineering for GeoAI. I deliver end-to-end pipelines that fuse SAR/optical/LiDAR with EO foundation backbones (ViT/MAE, spatiotemporal transformers) for forecasting and detection. I design and deploy **probabilistic deep learning frameworks** and **computer vision systems** to derive actionable insights from multimodal earth observation data. Specialized in **GeoAI** solutions for critical decision-making. Grounded in statistical modelling and MLOps (FastAPI, Docker, CI/CD, GPUs/DDP) to take research to production.

CORE SKILLS

- **Data Science & Statistical Learning:** Probabilistic modeling; Variational Autoencoders (VAE); Probabilistic forecasting

- **Computer Vision & Foundation Models:** Vision Transformers (ViT); Masked Autoencoders (MAE); Contrastive SSL; Spatiotemporal Transformers; Multimodal sensor fusion (SAR/Optical); Object Detection & Segmentation

- **GeoAI & Spatial Statistics:** Spatial dependence modeling; Geostatistics; Domain adaptation for EO data

- **Geospatial/EO:** SAR/Optical/LiDAR; Sentinel-1/2, Landsat; STAC; GDAL, Rasterio, GeoPandas, xarray/rioxarray

- **MLOps & Systems:** PyTorch, FastAPI, Docker, CI/CD; AWS (S3, EC2, Lambda); GPUs/DDP

PROFESSIONAL EXPERIENCE

Mar 2025 – Present

Senior Geospatial Machine Learning Scientist   **Promethee Earth Intelligence**
Focus: Applied AI research and engineering in geospatial intelligence, remote sensing, computer vision, and probabilistic modeling.
Key Achievements:

- **GEOINT Prototyping:** Prototyped components for a GEOINT solution leveraging **state-of-the-art computer vision** and **probabilistic fusion** over multimodal remote sensing (SAR/Optical/LiDAR) and OSINT.

- **Advanced Computer Vision:** Developed robust detection pipelines using **Vision Transformers (ViT)** and **Masked Autoencoders (MAE)**, significantly improving performance on diverse EO datasets.

- **Remote Sensing Foundation Models:** Leveraged/adapted EO foundation backbones (ViT/MAE-style) for downstream tasks (vessel detection, flood detection, crop monitoring, etc.), improving data efficiency and robustness.

- **Satellite Image Indexing:** Developed computer vision models for near real-time vessel detection/classification from multi-sensor (SAR/optical) imagery.

- **Probabilistic Fusion & Investigation:** Delivered cross-source entity correlation using statistical association methods across imagery, AIS, and OSINT, providing calibrated confidence scores.

- **GeoAI Model Adaptation:** Created domain-adapted neural networks for complex geospatial tasks, focusing on generalization across varying atmospheric and terrestrial conditions.

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PyTorch, Transformers, Computer Vision, Probabilistic Deep Learning, GeoAI,
GeoPandas, Rasterio, rioxarray, GDAL, FastAPI, Docker, CI/CD
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2022 – Feb 2025	**Data Scientist & Technical Consultant**	**Atos**

Directed AI/ML initiatives from research to production, focusing on satellite data and predictive modeling for industry and government clients.

Key Achievements:

- Led the development of LSTM models for financial forecasting with satellite indicators; improved forecasting accuracy versus baseline.

- Designed an agricultural plot delineation engine based on satellite data and neural networks.

- Mentored junior scientists and supervised master level students.

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PyTorch, TensorFlow, Pandas, NumPy, rioxarray, GeoPandas, Rasterio, R, Git, Julia
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2022 – Feb 2025	**Ph.D. Candidate in Applied Mathematics**	**Paris-Saclay University**

Dissertation: "Forecasting Agricultural Commodity Prices & Yield from Satellite Data using Machine Learning", MIA-PS Lab, Palaiseau, France.

Supervisors: Dr. David Makowski, Dr. Philippe Ciais

Highlights:

- Built a production ML pipeline for real-time commodity price prediction, ingesting multi-terabyte satellite data streams.

- Developed spatiotemporal neural architectures (CNN, LSTM, Transformers) for forecasting from geospatial data.

- Created feature extraction methods based on VAE/self-supervised learning for crop monitoring.

- Achieved strong cross-market generalization (USA, Africa) on price/yield prediction tasks.

- Presented results at leading conferences (EGU), with 4+ peer-reviewed journal publications.

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PyTorch, TensorFlow, Scikit-learn, Pandas, NumPy, rioxarray, Bash, R, Git, Julia,
Python
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Apr 2021 – Sep 2021	**Deep Learning Scientist (Intern)**	**INRAE, TETIS Lab**

Project: Characterization of forests via Sentinel-1/2 and LiDAR fusion.

Impact: Co-authored a high-impact IEEE publication; improved forest attribute estimation (basal area, volume) using neural models.

- Advanced fusion of LiDAR and SAR/Optical data for detailed stand-level mapping.

- Developed a deep learning framework for forest attribute estimation.

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TensorFlow, Scikit-learn, Pandas, NumPy, rioxarray, R, Git, Python
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EDUCATION

2022 – Feb 2025	**Ph.D., Mathematics (AI, Remote Sensing)**	**Paris-Saclay University**

Dissertation: "Forecasting Agricultural Commodity Prices & Yield from Satellite Data using Machine Learning".

2020 – 2021	**MSc, Geomatics & Environment**	**Aix-Marseille University**

Key project: Automated land-cover change detection pipeline (Python, Sentinel-2, 10M+ pixels).

2019 – 2020	**MSc, Geomatics with Remote Sensing and GIS**	**Stockholm University**

Key project: Satellite time-series modeling for snow depth retrieval.

PUBLICATIONS

1. **Teste, F.**, Makowski, D., Ciais, P. (2025). Quantitative Predictions of Crop Yields and Prices from Satellite-Based Machine Learning: Applications to Soybean and Corn. *SSRN Preprint*.

2. **Teste, F.**, Ciais, P., Makowski, D. (2024). Forecasting crop yield and price variations with machine learning from satellite-derived gross primary production maps. *SSRN Preprint*.

3. **Teste, F.**, Gangloff, H., Chen, M., Ciais, P., Makowski, D. (2024). Leveraging satellite data with machine and deep learning techniques for corn yield and price forecasting. *IEEE Transactions on Geoscience and Remote Sensing*,

62, 1-16.

4. **Teste, F.**, Makowski, D., Bazzi, H., Ciais, P. (2024). Early Forecasting of Corn Yield and Price Variations Using Satellite Vegetation Products. *Computers and Electronics in Agriculture*, 221, 108962. (Impact Factor: 8.3)

5. Lahssini, K., **Teste, F.**, Dayal, K., Durrieu, S., Ienco, D., Monnet, J.-M. (2022). Combining LiDAR Metrics and Sentinel-2 Imagery to Estimate Basal Area and Wood Volume in Complex Forest Environments via Neural Networks. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 15, 4337-4348.

CONFERENCES & WORKSHOPS

- **Apr 2024:** Oral presentation, EGU General Assembly (Vienna, Austria): Improving early predictions of crop yields and prices using satellite imagery and machine and deep learning techniques.

- **Oct 2023:** Invited speaker, MIA-PS Lab Workshop: Early Forecasting of Corn Yield and Price Variations.

- **Nov 2022:** Featured speaker, CLAND Workshop: Using Satellite Products to Predict Agricultural Commodity Price Changes.

LANGUAGES
English: Fluent (C1)
French: Native
Spanish: Professional (B2)
Swedish: Basic (B1)

INTERESTS
Boxing (~12 years)
Hiking
Photography

TECHNICAL SKILLS
Programming: Python, R, Julia, Bash
AI/ML: PyTorch, TensorFlow, Transformers, Scikit-learn, Probabilistic NN
Computer Vision: ViT, MAE, Object Detection, Segmentation, SSL
MLOps: Docker, Git, CI/CD, FastAPI, AWS
Geospatial: GDAL, Rasterio, GeoPandas, rioxarray; SAR/Optical/LiDAR, Sentinel-1/2