FLORIAN TESTE

PhD Candidate
(Available late 2024)

Paris, France – French Nationality

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PROFILE

PhD Candidate

Currently in the final year of a Ph.D. in mathematics at the University Paris-Saclay. I specialize in developing innovative solutions at the intersection of data science, machine learning, and environmental sciences, with expertise in geospatial analysis, remote sensing, and machine learning.
Proficient in Python, R, Julia, Bash, Git, LaTeX, and various machine learning libraries.

Python - 75%
R - 90%
Julia - 60%
Bash - 50%
Git - 60%
LaTeX - 70%
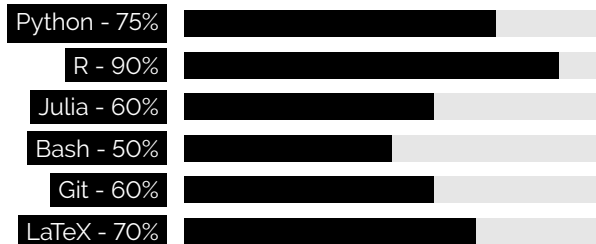
RESEARCH EXPERIENCE

2022 – Late 2024

Ph.D. candidate in Mathematics   **University Paris-Saclay**
Topic: "Forecasting agricultural commodity prices & yield from satellite data using Machine Learning", at the MIA-PS lab, Palaiseau, France
Supervised by: Dr. David Makowski & Dr. Philippe Ciais.

This research aims to develop and validate a novel framework using machine learning to predict global agricultural commodity prices and yields directly from satellite data. The framework we developed eliminates the need for unreliable regional production and demand estimates, contributing to enhanced global food security through more accurate and timely forecasts month before harvest.

Objectives:

- Develop a methodology to predict global commodity price variations directly from freely-available satellite data.

- Design machine learning and deep learning algorithms to extract key features from satellite images for accurate predictions.

- Validate the framework on key crops (maize, soybean, rice, wheat) across diverse production regions and under varying environmental and social factors.

- Achieve real-time forecasting capabilities for both price and yield variations.

```
Pytorch-TensorFlow-Scikit-learn / Pandas-Numpy / Rioxarray / Bash / R /
Git / Julia / Python / QGIS
```

2022 – Present

Consultant Data Scientist   **Atos**
As an industrial PhD student with Atos, I am frequently consulted by the company to provide expertise in the areas of competence gained during my thesis. Specifically, I supervised a graduate intern (MSc level) in developing a neural network (LSTM-type RNN) for predicting soybean prices from satellite data.

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Pytorch-TensorFlow-Scikit-learn / Pandas-Numpy / Rioxarray / Bash / R /
Git / Julia / Python
```

Apr 2021 – Sep 2021	**Deep Learning Scientist Intern**	**INRAE**

Topic: "Characterization of forests by coupling Sentinel-1 & Sentinel-2 and LIDAR data using deep learning methods," at the TETIS lab, Montpellier, France
Supervised by: Dr. Sylvie Durrieu & Dr. Dino Ienco.

The main objectives of this internship:

- Evaluate the potential of Sentinel-1 and Sentinel-2 data for characterizing and mapping forest composition (coniferous, deciduous, mixed).

- Assess the interest of data fusion (LiDAR and Sentinel-1 and Sentinel-2) using deep learning methods to improve the mapping of various stand types and potentially characterize specific forest attributes initially estimated using only LiDAR data, such as total volume and basal area at the stand level.

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TensorFlow-Scikit-learn / Pandas-Numpy / Rioxarray / R / Git / Python
```

EDUCATION

2022 – Late 2024	**Ph.D. in Mathematics**	**Paris-Saclay University**

Topic: "Forecasting agricultural commodity prices & yield from satellite data using Machine Learning," UMR MIA-Paris.
Supervised by: Dr. David Makowski & Dr. Philippe Ciais.

2020 – 2021	**Master's (2nd year)**	**Aix-Marseille University**
	Geomatics & Environment	

2019 – 2020	**Master's (1st year)**	**Stockholm University**
	MSc Geomatics with Remote Sensing and GIS	

PUBLICATIONS

1. **Teste, F., Gangloff, H., Chen, M., et al. (2024).** *Leveraging satellite data with machine and deep learning techniques for corn yield and price forecasting.* TechRxiv, March 4, 2024.

2. **Teste, F., Makowski, D., Bazzi, H., Ciais, P. (2023).** *Early Forecasting of Corn Yield and Price Variations Using Satellite Vegetation Products.* SSRN.

3. **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 Environment via Neural Networks.* IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing.

CONFERENCES & WORKSHOPS

- **October 4, 2023**: Presented ongoing research on *"Early Forecasting of Corn Yield and Price Variations Using Satellite Vegetation Products"* at the MIA-PS lab workshop.

- **November 18, 2022**: Presented the first chapter of my Ph.D. thesis, *Using Satellite Products to Predict Agricultural Commodity Price Changes from Production Shocks*, at the "Data Analysis Methods for Monitoring Vegetation Characteristics from Satellite Products" workshop, organized by CLAND.

LANGUAGES

English - C1
French - Native
Spanish - B2
Swedish - B1

INTERESTS

Boxing (~12 years of practice)

RELEVANT SKILLS

Machine (Deep) Learning
Statistics
Remote Sensing
Python & Programming