Matthieu Verlynde

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RESEARCH INTERESTS

Remote sensing, deep learning, green AI, optimization, weakly-supervised classification.

EDUCATION

Université Paris-Saclay, **AgroParisTech**, Palaiseau, France — September 2020 — September 2024
Master of Engineering: Data science in environment and life science
Master of Computational Biology

Lycée Henri IV, Paris, France — September 2018 — August 2020
Preparatory Class : Biology, Chemistry, Physics, Earth Sciences

PROFESSIONAL EXPERIENCE

LISTIC, Université Savoie Mont Blanc — Annecy-le-Vieux, France
PhD student — October 2024 — Present

- Subject: **Weakly supervised and frugal classification for image time series in remote sensing.**
- multi-criteria decision metric construction for algorithm frugality.
- optimization of deep learning models for remote sensing data classification.

LISTIC, Université Savoie Mont Blanc — Annecy-le-Vieux, France
Intern — March 2024 — September 2024

- hardware performances monitoring for deep learning tasks in remote sensing.
- change detection algorithm comparisons.
- programmming in Python, bash, FLUX.
- reviewed engineering internship report.

Faculty of Geo-Information Science and Earth Observation, University of Twente — Enschede, Netherlands
Intern — April 2023 — July 2023

- evaluation of ecosystem restoration projects in remote sensing.
- naturalistic knowledge.
- satellite optical image processing.

International Research Center in Environment and Development (CIRED) — Nogent-sur-Marne, France
Intern — September 2022 — March 2023

- validation of a land-use-land-cover map and modelling of carbon storage (machine learning, SVM and RF).
- post-processing, data pretreatment, machine learning, **publication writing**.
- teaching experience, student project management.

National Park of Guadeloupe — Saint-Claude, Guadeloupe, France
Intern — April 2022 — August 2022

- implementation of an online Guadeloupean fauna and flora atlas (GeoNature-Atlas).
- naturalistic knowledge, database management.
- design for the Karunati Atlas website

PROJECTS

Study of the evolution of the territory using satellite images — Palaiseau, France
AgroParisTech — November 2023 — March 2024

- remote sensing time series analyses.
- satellite image analysis, dynamic time warping applications, clustering algorithms.

Biodiversity and management of forest and meadow environments in the Alsatian Vosges — Nancy, France
AgroParisTech — April 2022 — May 2022

- on-site floristic and ecological surveys
- naturalistic knowledge, bibliography, project management and data analysis.

PUBLICATIONS

Journal paper

- A. Vallet, S. Dupuy, M. Verlynde, and R. Gaetano, 'Generating high-resolution land use and land cover maps for the greater Mariño watershed in 2019 with machine learning', Sci Data, vol. 11, no. 1, Aug. 2024, doi: 10.1038/s41597-024-03750-x.

Conference proceedings

- M. Verlynde, A. Mian and Y. Yan, 'Effects of class distribution shift in multi-label classification splits: a study case on BigEarthNet', IGARSS 2025 - 2025 IEEE International Geoscience and Remote Sensing Symposium. IEEE. (accepted)
- M. Verlynde, A. Mian and Y. Yan, 'Frugalité en télédétection : évaluer la performance et la consommation énergétique en détection de changements d'images PolSAR', 2025 30e Colloque sur le traitement du signal et des images. GRETSI. (submitted)
- M. Verlynde, A. Mian and Y. Yan, 'Scoring frugality for remote sensing data processing algorithms', 2025 33rd European Signal Processing Conference (EUSIPCO). IEEE. (accepted)

SELECTED COURSES

PhD Courses

- Environmental crises: role and positioning of research (May 2025)
- Numerical Optimization: theory and application (June 2025)
- Is AI our ally? The great trial of AI (November 2024)

Master Courses

- Advanced artificial learning (2023)
- Theoretical computer science (2023)
- Programming for data science (2024)
- Data mining and machine learning (2023)

OTHER EXPERIENCES

Teaching in IUT Annecy   Annecy-le-Vieux, France
Adjunct lecturer   October 2024 — December 2024

- Artificial intelligence techniques — Lectures, tutorials and practical works.
- Big data management — Tutorials, practical works and student projects.

Teaching in Polytech Annecy-Chambéry   Annecy-le-Vieux, France
Adjunct lecturer   October 2024 — November 2024

- Python programming — Practical works.

Teaching in AgroParisTech   Palaiseau, France
Guest lecturer   January 2023

- Modelling ecosystem services — Student projects.

LANGUAGES

English: proficient
French: native
Dutch: basics
Spanish: basics

TOEIC : 990 (overall score)
Listening: 495 — Reading: 495
Test date: February 2024

SKILLS

- **Programming:** Python, R, SQL, Unix, LaTeX, HTML, PHP
- **Software:** QGIS, GitHub, ImageJ, Fiji, Grafana, InfluxDB, Pack Office, Visual Studio Code

REFERENCES

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Dr. Yajin Yan
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