

Matthieu Blanke

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EDUCATION

Inria Paris and DI ENS **Paris, France**
PhD student **2021-2024**

Deep learning for physical systems, advised by Marc Lelarge.

École Normal Supérieure Paris-Saclay **Paris, France**
Master of Science *Mathématiques, Vision, Apprentissage (MVA)* **2020-2021**

Machine learning, optimization and statistics. Also passed exams of statistical physics courses at ENS Paris.

École polytechnique **Paris, France**
Engineer's degree *Cycle ingénieur polytechnicien* **2017 - 2021**

Applied mathematics, computer science, theoretical physics

WORK EXPERIENCE

Inria Paris **Paris, France**
Research internship **April - September 2021**

Deep implicit layers with applications to physical systems. Advised by Marc Lelarge.

Econophysix **Paris, France**
Research internship **June - September 2020**

Particle-based stochastic modeling of the latent order book. Advised by Michael Benzaquen and Jean-Philippe Bouchaud.

Saildrone **Alameda, CA, USA**
Platform team intern **June - August 2019**

Processing of oceanographic data collected by drones, fault detection.

PUBLICATIONS

An updated list is available on [my Google Scholar page](#).

Matthieu Blanke, Marc Lelarge. Interpretable Meta-Learning of Physical Systems. The Twelfth International Conference on Learning Representations, 2024 ([ICLR 2024](#)).

Also presented at the Synergy of Scientific and Machine Learning Modeling workshop, at ICML 2023 (SynS & ML 2023).

Matthieu Blanke, Marc Lelarge. FLEX: an Adaptive Exploration Algorithm for Nonlinear Systems. The Fortieth International Conference on Machine Learning, 2023 ([ICML 2023](#)).

Also presented at the Machine Learning and the Physical Sciences workshop, at NeurIPS 2022.

Matthieu Blanke, Marc Lelarge. Online greedy identification of linear dynamical systems. 61st Conference on Decision and Control, 2022 ([CDC 2022](#)).

Also presented at the Adaptive Experimental Design and Active Learning in the Real World workshop, at ICML 2022.

Matthieu Blanke, Jose Moran, Pierre-Philippe Crépin, Jean-Philippe Bouchaud, Michael Benzaquen. Market impact in a multiple metaorder landscape. Under submission.

PROJECTS AND SOFTWARE

The projects are available on [my GitHub page](#).

CAMEL Interpretable meta-learning of physical systems	2023
FLEX Adaptive exploration of physical systems.	2022
Deep Latent Variable Models Maximum likelihood sampling and missing data imputation based on deep learning. Supervised by S. Allasonnière.	2021
Market impact simulator Python module for noisy market impact experiments.	2020
Image segmentation: Random Walker and SegNet Theoretical study and Python implementation of the Random Walker algorithm. Performance benchmark versus the deep learning architecture SegNet. Supervised by S. Allasonnière.	2019
Automatic sport scene modeling A C++ library that automatically detects the players' positions on a sport video.	2020
Machine learning for power consumption forecast Clustering, pattern detection and statistics on weather data from Météo France to predict energy consumption. Implemented the algorithms from scratch in C++.	2019
IP-over-Discord A C program and a Node.JS Discord Bot for IP-over-Discord network tunneling.	2018
Physics exercise book Open source exercise book for undergraduate students preparing for the competitive exams for the top French engineering schools.	Ongoing

PRESENTATIONS

03/2024 Mines Paris Geosciences Department, invited talk Interpretable Meta-Learning of Physical Systems.	Paris
07/2023 MLIA seminar, invited talk Interpretable Meta-Learning of Physical Systems.	Paris
12/2023 ICML in Paris, contributed talk FLEX: an Adaptive Exploration Algorithm for Nonlinear Systems.	Paris
04/2023 Oral presentation for Safran Research Exploration of physical systems.	Paris
12/2022 ML4Physical Sciences workshop, poster presentation Online exploration of nonlinear physical systems.	Paris
10/2022 Inria PhD Seminar, oral presentation Exploration of physical systems.	Paris
06/2022 GdR IASIS, poster presentation Online greedy identification of physical systems. "Apprentissage et modélisation physique" workshop.	Paris
09/2021 CIRM Workshop, poster presentation Deep learning isochronism. "On Future Synergies for Stochastic and Learning Algorithms" workshop.	Marseille

TEACHING

Mines PSL Teaching assistant Probability theory. Differential equations.	Paris, France Fall 2023
Université Paris Cité Teaching assistant Numerical physics.	Paris, France Spring 2023
Université Paris 1 Panthéon-Sorbonne Teaching assistant Statistics.	Paris, France Fall 2022
Université Paris Cité Teaching assistant Numerical physics.	Paris, France Spring 2022
Université Paris 1 Panthéon-Sorbonne Teaching assistant Statistics.	Paris, France Fall 2021
École polytechnique, X-Talents Oral Examiner Weekly mathematics and physics oral tests preparing undergraduate students for the competitive entrance examinations of French top engineering schools.	Paris, France 2018

SERVICE

Organizer of the team's seminar	2022-2024
Reviewing ICML Workshop Synergy of Scientific and Machine Learning Modeling, NeurIPS workshop on Machine Learning and the Physical Sciences	

SKILLS

Computer languages Python, Julia, C, C++, Node.js, \LaTeX

Python frameworks PyTorch, JAX

LANGUAGES

Frenc Native

Italian Native

English Fluent

German Advanced

Spanish Conversational