MATTHIEU BLANKE

CURRICULUM VITAE

ABOUT ME

I am a PhD student in applied mathematics. I am passionate about complex systems, computer science and technology in general. I have a strong experience in programming. I am a hard worker and fast learner.

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EDUCATION

Paris, FRANCE — 2020 - 2021

ENS PARIS-SACLAY

Master's degree MVA « Mathématiques, Vision, Apprentissage »
Machine learning, statistics, optimal transport, optimization
Minor in statistical Physics

Paris, FRANCE — 2017 - 2021

ÉCOLE POLYTECHNIQUE

Cycle ingénieur polytechnicien
Ranked 7th in the entrance exam
Applied mathematics, theoretical physics and computer science

Paris, FRANCE — 2014 - 2017

LYCÉE LOUIS-LE-GRAND

Classe préparatoire MPSI-MP*
Mathematics, physics, computer science

Brest, FRANCE — 2014 - 2017

LYCÉE DE L'HARTELOIRE

Baccalauréat with major in mathemtatics
Graduated with first class honours

PROFESSIONAL EXPERIENCE

Paris, FRANCE — September 2021 - now

INRIA Paris – PhD student

Deep implicit layers with applications to physical systems.
Supervised by Marc Lelarge in team DYOGENE.

Paris, FRANCE — April 2021 - September 2021

INRIA Paris – Research intern

Deep implicit layers with applications to physical systems.
Supervised by Marc Lelarge in team DYOGENE.

Paris, FRANCE — April 2020 - August 2020

ECONOPHYSIX – Research intern

Theoretical study of an econophysics market model. Developed a fully-fledged Python package for numerical simulations. Publication under review.
Supervised by Michael Benzaquen and Jean-Philippe Bouchaud.

Silicon Valley, CA, US — June 2019 - September 2019

SAILDRONE – Platform Team intern

Developed data analysis Python modules for ocean physical measurements, including time series quality check and data pipeline engineering.

Normandy, FRANCE — 2018

MARINE NATIONALE – Military officer

Maritime security and law enforcement. Developed a Python data analysis tool for suspicious boats detection.

Paris, FRANCE — 2017-2018

ASSOCIATION X-TALENTS - Examiner

Conducted weekly Mathematics and Physics oral tests preparing undergraduate students for the competitive entrance examinations of French Top Engineering Schools.

PUBLICATIONS

under review

Market impact in a multiple metaorder landscape

M. Blanke, J. Moran, P.-P. Crépin, J.-P. Bouchaud, M.Benzaquen, submitted to Journal of Statistical Mechanics.

PRESENTATIONS AND POSTERS

under review

Differentiable planning for system identification

M. Blanke, M. Lelarge, submitted at NeurIPS workshop "Machine Learning and the Physical Sciences".

September 2021

Deep learning isochronism

M. Blanke, CIRM Marseille, workshop "On Future Synergies for Stochastic and Learning Algorithms".

PROJECTS

ongoing

Physics exercise book

Exercise book for undergraduate students preparing for the competitive exams for the top French engineering schools. Éditions Ellipses.

2021

DNA sequence prediction using kernel methods

Participation to the Kaggle data challenge of the course Machine learning with kernel methods of master's MVA.

2021

Deep Latent Variable Models

Study of the exact likelihood of DLVMs, focusing on maximum likelihood estimation and missing data imputation, based on this paper. Supervised by S. Allassonnière.

2020

Pattern recognition and Optimal Tranport

Optimal Transport and Wasserstein distances for signal processing and pattern recognition tasks, based on this paper. Supervised by G. Peyré.

2020

Hopfield Model

Theoretical analysis of the Hopfield model neural network. Python implementation and experiments. Supervised by L. Cugliandolo.

2020

Market impact simulator

Fully-fledged Python module for noisy market impact experiments, confirming the theoretical results of the associated paper.

2020

CycleGAN and anomaly detection

Image anomaly detection using the cycleGAN CNN architecture. Supervised by M. Lelarge.

2019

Image segmentation : Random Walker and SegNet

Theoretical study and Python implementation of the Random Walker algorithm. Performance analysis versus the deep learning architecture SegNet. Supervised by S. Allassonnière.

2019

Machine Learning for household power consumption

Clustering, pattern detection and statistics on weather from Météo France to predict energy consumption. Implemented the algorithms from scratch in C++.

2019

X-Coin

Developed a mobile app and programmed a Blockchain with Node.js for a new cryptocurrency.

2017

Physics study

Theoretical study of wind waves. Programmed numerical simulations with Python.

LANGUAGES

FRENCH	ITALIAN	ENGLISH	GERMAN	SPANISH
Fluent	Fluent	Fluent	Advanced	Beginner

COMPUTER SKILLS

PROGRAMMING

Python, Java, C, C++, Node.js, HTML, CSS

TYPESETTING

TeX