

Education

- 2018-2021 **Ph.D. in Computer Science**, *Computer science department, ENS*, Paris, France.
Advisor Pr. Stephane Mallat. Development of deep learning techniques for molecular quantum energy regressions and image classification problem using structured deep convolutional neural networks. Development of artist-machine interactive process for artistic creation.
- 2017 **M.Sc. Mathematics, Computer Vision, Machine Learning**, *ENS Paris-Saclay*, Cachan, France.
Student research projects on image classification, speech recognition, probabilistic graphical models and Monte-Carlo sampling.
- 2012-2015 **M.Sc. Applied Mathematics**, *Ecole Polytechnique*, Palaiseau, France.
Student research projects in 3D shape optimization in C++, fluid mechanics equations solver in CUDA.

Work experience

- 2021-2023 **Postdoctoral researcher**, *INRIA*, Rennes, France.
Numerical modeling and data assimilation for ocean dynamics, part of the ERC STUOD project.
- 2021-2022 **Teacher**, *ENS*, Rennes, France.
Course on introduction to probability and statistics for third year undergraduate students.
- 2020 **Computer Vision expert**, *ubble.ai*, Paris, France.
Automatic fraud detection on identity documents in video streams.
- 2017 **Research intern**, *Google Deep Mind*, London, UK.
Development of deep learning techniques applied to quantum physics.
- 2015 **Research intern**, *Fluid mechanics institute of the Technique University*, Dresden, Germany.
Development of mathematical model for collisions of solid structures in viscous fluids.

Scientific publications

- 2023 **MQGeometry-1.0: a multi-layer quasi-geostrophic solver on non-rectangular geometries**, *under review at Geoscientific Model Development*.
- 2022 **Modified hyper-viscosity for coarse resolution ocean models**, *STUOD Workshop*, Imperial College London.
- 2021 **Pushing the frontiers of density functionals by solving the fractional electron problem**, *Science*.
- 2021 **The Unreasonable Effectiveness of Patches in Convolutional Kernels Methods**, *International conference of learning representation (ICLR) 2021*.
- 2020 **Diptychs of human and machine perceptions**, *NeurIPS 2020 creativity workshop*.
- 2020 **Deep network classification by Scattering and homotopy dictionary learning**, *International conference of learning representation (ICLR) 2020*.
- 2020 **Interactive Neural Style Transfer with Artists**, *ICCC 2020*.
- 2019 **Dialog on a canvas with a machine**, *NeurIPS 2019 creativity workshop*.
- 2019 **Kymatio: Scattering Transforms in Python**, *Journal of machine learning research software*.
- 2019 **A constraint-based collision model for Cosserat rods**, *Archive of Applied Mechanics*.
- 2018 **Solid harmonic wavelet scattering for predictions of molecule properties**, *Journal of Chemical Physics* 148.

Software development

Kymatio.

Wavelet scattering transform in python (documentation, source).

Challenge data ENS website.

Kaggle like data challenge website for academic purpose developed in Django2 (website, source).