YUAN YIN

Montrouge, Île-de-France, France | yuan-yin-nn | yuan-yin.github.io | French, English, Mandarin

PROFESSIONAL SUMMARY

Passionate about cutting-edge technologies in **Machine Learning** (ML) and **Deep Learning** (DL), I specialize in pioneering **Neural Network** (NN) methods for analyzing physical dynamics, notably impacting fields like weather forecasting.

This proficiency allows me to craft customized DL/AI solutions for intricate challenges by blending data-driven and **physics-aware** approaches, also extensively work on other topics in **Computer Vision** (CV). Throughout my collaborative efforts in my PhD, I've explored various ML domains, including dynamic modeling, hybridizing physical-ML approaches, meta-learning, out-of-distribution generalization, continuous modeling, neural implicit representations, and more.

EDUCATION

Sorbonne Université *formerly UPMC (Paris-6)* — *Paris, France*
PhD in Machine Learning and Deep Learning — Jun 2023
MSc Yr 2, Master Data Science Paris (DAC) — 2019
Succeeded with Highest Honor (Très Bien), ranked 1st

Université Paris Cité *formerly Université Paris-Diderot (Paris-7)* — *Paris, France*
MSc Yr 1, Parisian Master of Research in Comp. Sci. (MPRI) — 2018
Succeeded with Highest Honor (Très Bien)

Beihang University *In China's Top 20 Universities* — *Beijing, China*
BSc, Applied Computer Science — 2016

EXPERIENCE

Postdoctoral Researcher — Jul 2023 - Dec 2023
Sorbonne Université, ISIR, Team MLIA — *Paris, France*
- Supervision of ongoing research projects on Physics-Aware Deep Learning

PhD Student, Teaching Assistant — Oct 2019 - Jun 2023
Sorbonne Université, ISIR, Team MLIA — *Paris, France*
- Supervised by Patrick Gallinari and Nicolas Baskiotis
- Focus: Physics-Aware Deep Learning and dynamical systems
  ❶ DL-physics hybrid modeling
  ❷ Generalization of DL modeling to seen and unseen systems
  ❸ Continuous dynamics modeling with neural networks

Research Intern — Feb 2019 - Sep 2019
Sorbonne Université, ISIR, Team MLIA — *Paris, France*
- Supervised by Patrick Gallinari, Arthur Pajot, and Emmanuel de Bézenac
- Spatiotemporal data completion with generative adversarial nets (GANs)

Research Intern — Feb 2018 - Jul 2018
Inria Paris — *Paris, France*
- Supervised by Roberto Di Cosmo and Stefano Zacchiroli
- Large-scale classification of programming languages

Research Intern — May 2015 - Jul 2016
Beihang University — *Beijing, China*
- Supervised by Yunhong Wang and Di Huang
- Identity recognition with hand vein images; smile detection

SERVICES

Rewarded Top Reviewer at NeurIPS 2023

Conference Reviewer at NeurIPS 2021/2022/2023, ICLR 2023/2024, ICML 2022/2023/2024, ECML-PKDD 2021, and ACM Multimedia 2021

Workshop Reviewer at ML4PS at ICML 2022/2023 and NeurIPS 2023, Physics4ML at ICLR 2023, SynS & ML at ICML 2023.

Teaching 192 teaching hours during 3 yrs (Oct 2019 - Sep 2022) in French at Sorbonne University in Engineering Department (UFR 919)

For undergraduates: C programming (L1), Algorithmics (L2), Probabilities (L3). For postgraduates: Research methodology in Machine Learning (M2)

LANGUAGES

Mandarin (native)
French (CEFR C1, DALF type exams, 2017)
English (CEFR B2, IELTS 6.0, 2015)

TECHNICAL SKILLS

Programming Languages
Advanced: Python (PyTorch, NumPy, etc.)
Intermediate: LaTeX, C/C++, Java, Matlab, OCaml
Basic: Prolog, iOS Development, SQL

Tools
Git, Emacs, VS Code, Eclipse

PUBLICATIONS

Conference Papers

** Equal contribution*

- **Y. Yin***, M. Kirchmeyer*, J.-Y. Franceschi*, A. Rakotomamonjy, and P. Gallinari. Continuous PDE dynamics forecasting with implicit neural representations. In *ICLR 2023*. **(Spotlight)**
- L. Serrano, L. Le Boudec, A. Kassaï Koupaï, **Y. Yin**, T. X. Wang, J.-N. Vittaut, and P. Gallinari. Operator learning with neural fields: Tackling PDEs on general geometries. In *NeurIPS 2023*. **(Poster)**
- M. Kirchmeyer*, **Y. Yin***, J. Donà, N. Baskiotis, A. Rakotomamonjy, and P. Gallinari. Generalizing to new physical systems via context-informed dynamics model. In *ICML 2022*. **(Spotlight)**
- **Y. Yin**, I. Ayed, E. de Bézenac, N. Baskiotis, and P. Gallinari. LEADS: Learning dynamical systems that generalize across environments. In *NeurIPS 2021*. **(Poster)**
- **Y. Yin***, V. Le Guen*, J. Donà*, E. de Bézenac*, I. Ayed*, N. Thome, and P. Gallinari. Augmenting physical models with deep networks for complex dynamics forecasting. In *ICLR 2021*. **(Oral, also in J Stat Mech: Theory Exp)**

Journal Papers

- C. Metta, A. Beretta, R. Guidotti, **Y. Yin**, P. Gallinari, S. Rinzivillo, and F. Giannotti. Improving trust and confidence in medical skin lesion diagnosis through explainable deep learning. *Int. J. Data. Sci. Anal.*, 2023.
- D. Huang, R.K. Zhang, **Y. Yin**, Y.D. Wang, and Y.H. Wang. Local feature approach to dorsal hand vein recognition by centroid-based circular keypoint grid and fine-grained matching. *Image Vis. Comput.*, 2017.

Workshop Papers

- L. Serrano, L. Migus, **Y. Yin**, J. A. Mazari, J.-N. Vittaut, and P. Gallinari. INFINITY: Neural field modeling for reynolds-averaged navier-stokes equations. In *ICML 2023 Workshop on SynS & ML*.
- L. Migus, **Y. Yin**, J. A. Mazari, and P. Gallinari. Multi-scale physical representations for approximating PDE solutions with graph neural operators. In *ICLR 2022 Workshop on GTRL*.
- **Y. Yin**, A. Pajot, E. De Bézenac, and P. Gallinari. Unsupervised inpainting for occluded sea surface temperature sequences. In *CI 2019*.

Preprints *not peer-reviewed*

- E. Le Naour, L. Serrano, L. Migus, **Y. Yin**, G. Agoua, N. Baskiotis, P. Gallinari, and V. Guigue. Time series continuous modeling for imputation and forecasting with implicit neural representations, 2023.
- **Y. Yin**, A. Pajot, E. de Bézenac, and P. Gallinari. Unsupervised spatiotemporal data inpainting, 2020.

TALKS AND PRESENTATIONS

Workshop *Mathematical Foundations of AI*, at DATAIA-SCAI — Jan 2024
Seminar at Valeo.ai — Jan 2024
Seminar UMR MIA Paris-Saclay, at AgroParisTech — Nov 2023
Seminar LAGA-MCS, at Université Sorbonne Paris Nord *(Paris-13)* — Nov 2023
Tutorial at ECML-PKDD 2023 — Sep 2023
PhD Defense — Jun 2023
Seminar of Signal Processing Laboratory (LTS4) at EPFL — May 2023
Spotlight Conference Presentation at ICLR 2023 — May 2023
AI4Science Talks, at Machine Learning for Simulation Lab at University of Stuttgart & NEC Labs Europe — Apr 2023
SIG LearnFluidS, at d'Alembert, Sorbonne Université — Mar 2023
Medical Biology Engineers Day of AP-HP — Mar 2023
Seminar at Criteo AI Lab — Nov 2022
Seminar Sorbonne-ISAE-CERFACS — Oct 2022
Spotlight Conference Presentation at ICML 2022 — Jul 2022
Seminar at Extrality — Feb 2022
Conference Presentation at NeurIPS 2021@Paris — Dec 2021
AAAI 2021 Spring Symposium MLPS — Mar 2021