

Younesse Kaddar

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Education

- 2020–2025 **DPhil in Computer Science**, *University of Oxford*, UK, *Scholarship* : Oxford-DeepMind.
Teaching and tutoring : Principles of Programming Languages, Bayesian Statistical Probabilistic Programming
- 2019–2020 **Visiting researcher (Predoctoral research year) supervised by Marcelo Fiore**, *University of Cambridge*,
Department of Computer Science and Technology, UK.
- 2018–2019 **Parisian Master of Research in Computer Science (MPRI) : 2nd year (M2R), Master of Research (MRes)**, *École Normale Supérieure Paris-Saclay*, Paris, *Honors* : Summa cum laude.
- 2017–2018 **Parisian Master of Research in Computer Science (MPRI) : 1st year (M1), Master of Science (MSc)**, *École Normale Supérieure Paris-Saclay*, Cachan / Paris .
Overall rank : 1st (out of 27)
Courses : Category theory & λ -calculus, Advanced Complexity, Statistical Learning, Computer Vision, Robot Motion Planning, Initiation to Research, English. *Extra courses* : Proof assistants (LMFI Master, at Paris-Diderot), Modules and finite groups (Math Master at Ecole Polytechnique)
Research Master in Cognitive Science (Cogmaster), *École Normale Supérieure Paris*, Paris .
Courses : Computational Neuroscience, Neuromodeling, Neurorobotics, Machine Learning applied to Neuroscience
- 2016–2017 **Bachelor of Computer Science**, *École Normale Supérieure Paris-Saclay*, Cachan.
Overall rank : 1st (out of 28)
Courses : λ -calculus & Logic, Logic Projects (DPLL algorithm & Coq project), Discrete Mathematics, Programming & Semantics, Advanced Programming, Compiler Project, Formal Languages, Computability & Complexity, Algorithmics, Advanced Algorithms, Algebra, English, Computer Architecture
- 2013–2016 **Classes Préparatoires aux Grandes Écoles**, *Lycée Henri Poincaré*, Nancy.
MPSI–MP* : Preparatory courses to nationwide competitive exams in mathematics, physics and computer science
- 2012–2013 **Baccalauréat S**, *Lycée Henri Poincaré*, Nancy, major in mathematics, *with highest honors*.

Research Experience

- 2024 **Panelist at PADL 2024 (POPL workshop)**.
Topic : Declarative Languages for Safe AI
Chair : Ekaterina Komendantskaya (Heriot-Watt University & University of Southampton)
Panelists : Gopal Gupta (University of Texas at Dallas), Claudia Faggian (Université de Paris & CNRS), Wen Kokke (University of Edinburgh), Alessandro Bruni (IT University of Copenhagen), Younesse Kaddar (University of Oxford)
Link : <https://popl24.sigplan.org/home/PADL-2024>
Video : <https://www.youtube.com/live/UDLxVLq1uGk?si=RA0InzW3toeok91d&t=27385>
- 2024 **Amortizing Intractable Inference in Large Language Models**.
Authors : E. J. Hu, M. Jain, E. Elmoznino, Y. Kaddar, G. Lajoie, Y. Bengio, N. Malkin
Publication : Accepted at International Conference on Learning Representations (ICLR) 2024
Link : <https://arxiv.org/abs/2310.04363>
Code : <https://github.com/GFN0rg/gfn-lm-tuning>
- 2024 **Probabilistic programming interfaces for random graphs : Markov categories, graphons, and nominal sets**.
Authors : N. Ackerman, C. Freer, Y. Kaddar, J. Karwowski, S. Moss, D. Roy, S. Staton, H. Yang
Publication : Submitted to Principles of Programming Languages (POPL 2024)
Link : <https://younesse.net/assets/popl2024.pdf> **DOI** : <https://doi.org/10.1145/3632903>
- 2023 **A model of stochastic memoization and name generation in probabilistic programming : categorical semantics via monads on presheaf categories**.
Authors : Y. Kaddar and S. Staton
Publication : Accepted at Mathematical Foundations of Programming Semantics (MFPS) 2023
Link : <https://younesse.net/assets/mfps2023.pdf>
Slides : https://younesse.net/assets/kaddar_mfps2023.pdf

- 2023 **Affine monads and lazy structures for Bayesian programming.**
Authors : S. Dash, Y. Kaddar, H. Paquet and S. Staton
Publication : Accepted for 50th ACM SIGPLAN Symposium on Principles of Programming Languages (POPL 2023)
Link : <https://dl.acm.org/doi/10.1145/3571239>
- Sep. 2022 **Higher order programming with probabilistic effects : A model of stochastic memoization and name generation.**
Authors : Younesse Kaddar and Sam Staton
Link : <https://www.youtube.com/watch?v=URN2UFGbbdU>
- Aug. 2022 **Statistical Programming with Categorical Measure Theory and LazyPPL (demo), *Applied Category Theory*.**
Authors : S. Dash, Y. Kaddar, H. Paquet and S. Staton
Links : https://msp.cis.strath.ac.uk/act2022/slides/ACT2022_slides_8887.pdf, <https://youtu.be/KsxKNzUnE6E?t=6764>

Awards

- June 2023 **1st Prize & Impact Prize, *Bio x ML Hackathon 2023***, HuggingFace, OpenBioML, Lux Capital & LatchBio,
<https://hackathon.bio/>.
Project : SVM : Generate unified protein embedding across multiple protein modalities.
<https://github.com/svm-ai/svm-hackathon>
<https://huggingface.co/BIOML-SVM>
- Nov. 2022 **1st Prize, *OxfordHack 2022***, LENS Main Challenge, <https://devpost.com/software/checkyboty>.
Project : CheckyBoty : idealised anonymous spoofing detection probabilistic model.
https://younesse.net/assets/hackathons/OxfordHack_2022/spoof_detection.html

Internships

- Jan. 2024 – **Cohere For AI Scholars Programme, *Cohere*.**
 Aug. 2024 **Mentor** : Beyza Ermiş
Research Topic : LLM Hallucinations
- June 2023 – **PhD Internship, *Mila (Quebec Artificial Intelligence Institute)***, Université de Montréal, Montreal, Canada.
 Jan. 2024 **Supervisor** : Yoshua Bengio
Research Topic : GFlowNets for reasoning & AI safety
- Oct. 2019 – **Pre-doctoral Internship, *University of Cambridge***, Department of Computer Science, Cambridge, UK.
 Aug. 2020 **Link** : https://younesse.net/assets/ARPE_report.pdf **Mark** : 18/20
Title : *Ideal Distributors*
Supervisor : Marcelo Fiore
- Apr.–Aug. 2019 **M2 Internship, *Macquarie University***, Department of Mathematics and Statistics, Sydney, Australia.
Link : <https://younesse.net/M2-report/> **Mark** : 18/20
Title : *Tricocycloids, Effect Monoids and Effectuses*
Supervisor : Richard Garner
- June–Aug. 2018 **M1 Internship, *University of Oxford***, Department of Computer Science, Oxford, UK.
Link : <https://younesse.net/M1-report/> **Mark** : 15.7/20
Title : *Event Structures as Presheaves*
Supervisor : Ohad Kammar
- June–Jul. 2017 **L3 Internship, *University of Nottingham***, Functional Programming Laboratory, Nottingham, UK.
Link : <https://younesse.net/L3-report/> **Mark** : 18/20
Title : *Type Theory forms a weak omega groupoid*
Supervisors : Thorsten Altenkirch, Paolo Capriotti, Nicolai Kraus

Teaching

- May 2023 **Topics in Minds and Machines : Perception, Cognition, and ChatGPT, *Philosophy Seminar, University of Oxford*.**
Role : Lectured on Deep Learning and Large Language Models.
- Oct.–Dec. 2022 **Bayesian Statistical Probabilistic Programming class, *University of Oxford*.**
Role : Class tutor and marker.
- May–Jun. 2022 **Imperative Programming in Scala III, *University of Oxford*.**
Role : Demonstrator.

Oct.–Dec. **Principles of Programming Languages class and Revision class**, *University of Oxford*.

2020, 2021 **Role** : Class tutor and marker, personal tutor (Exeter College).

Jul. 2020, **Online Research Programme**, *Immerse Education*.

Dec. 2020, **Topics** : Bayesian probabilistic programming, Algorithms, Supervised learning.

Jul. 2021

2017-2018 **Tutorial Teaching**, *ENS Paris-Saclay*.

Subjects : Computability and Complexity Theory, Algorithms, Automata Theory, Formal Language Theory.

Summer Schools

August 2023 **MIT Probabilistic Programming Mini School**, Online.

Jul. 2022 **CalTech Neurosymbolic Programming Summer School**, Pasadena, CA, USA.

Jun.–Jul. **Oregon Programming Languages Summer School**, Eugene, OR, USA.

2022

Programming Languages

Advanced Python, Haskell, OCaml

Intermediate Coq, Agda, Scala, PHP, HTML/CSS/JavaScript, React/ReactNative

Basic Lean, Bash, Node.js, C/C++

Languages

French First language

English Fluent, Cambridge Certificate in Advanced English (Overall Score : 201/210)

CEFR Level : C2

German Basic

CEFR Level : B2