

Oussama Zekri

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Normalien Student Researcher, ENS Paris-Saclay, France

EXPERIENCE

- **Department of Statistics, University of Washington** Feb 2025 - Jul 2025
Research Intern Seattle, USA
 - Fast sampling in Large-Scale Generative Models.
 - Advised by [Pr. Zaid Harchaoui](#).
- **Department of Mathematics, Imperial College London** Nov 2024 - Jan 2025
Research Intern London, UK
 - Discrete Diffusion Models and Reinforcement Learning. Authored [1].
 - Advised by [Dr. Nicolas Boullé](#).
- **Huawei AI Research** Mar 2024 - Sep 2024
Research Intern Paris, France
 - Inference properties and In-Context Learning in Large Language Models. Authored [2, 3, 4].
 - Advised by [Dr. Ievgen Redko](#).
- **System Optimization Laboratory, University of Kyoto** Apr 2023 - Jul 2023
Research Intern Kyoto, Japan
 - Convergence analysis under consistent error bounds.
 - Advised by [Dr. Ellen H. Fukuda](#) & [Dr. Bruno F. Lourenço](#).
- **Centre Borelli, ENS Paris-Saclay** Mar 2022 - Jul 2022
Research Intern. Gif-sur-Yvette, France
 - Similarity measures between time series inspired by optimal transport.
 - Advised by Pr. [Laurent Oudre](#) & Dr. [Thibaut Germain](#).

EDUCATION

- **ENS Paris-Saclay, Gif-sur-Yvette** Sep 2023 - Aug 2024
Master's Degree, M2 MVA, Mathematics and Applications.
 - Courses in Europe's leading MsC in ML, taught by top-level researchers.
 - Relevant coursework : Statistical learning, Optimal Transport, Convex optimization, Distributed and Large-Scale Computing Optimization, Kernel Methods, Deep Learning in Practice...
- **Ecole Polytechnique & ENS Paris-Saclay, Palaiseau** Sep 2022 - Aug 2023
Master's Degree, M1 Hadamard, Pure & Applied Mathematics.
 - Mathematics courses of a very high standard.
 - Relevant coursework : Functional Analysis, Optimization and Numerical Optimization, Advanced Probabilities, Statistics, Machine Learning and Stochastic Simulation...
- **ENS Paris-Saclay, Gif-sur-Yvette** Sep 2021 - Aug 2025
Normalien élève Diploma.

PUBLICATIONS

- [1] O. Zekri, N. Boullé. [Fine-Tuning Discrete Diffusion Models with Policy Gradient Methods](#). *Submitted*.
- [2] O. Zekri, A. Odonnat, A. Benechehab, L. Bleistein, N. Boullé, I. Redko. [Large Language Models as Markov Chains](#). *Submitted. (Featured in Forbes)*.
- [3] A. Benechehab, Y. Attia El Hili, A. Odonnat, O. Zekri, A. Thomas, G. Paolo, M. Filippone, I. Redko, B. Kégl. [Zero-shot Model-based Reinforcement Learning using Large Language Models](#). In ICLR 2025.
- [4] O. Zekri, A. Benechehab, I. Redko. [Can LLMs predict the convergence of Stochastic Gradient Descent?](#). In ICML 2024 - ICL Workshop. (Top 10% submitted paper).

INVITED TALKS

- **Fine-Tuning Discrete Diffusion Models with Policy Gradient Method [1]**
 - Mar. 2025 : Generative Modeling, Sampling & Transport Seminar - Google DeepMind, London.
- **Large Language Models as Markov Chains [2]**
 - Jan. 2025 : [LC2 Seminar](#) - Imperial College London, London.
 - Nov. 2024 : [Machine Learning and Dynamical Systems Seminar](#) - Alan Turing Institute, London.
 - Nov. 2024 : [AI Seminar Series](#) - Technology Innovation Institute, Abu Dhabi.

TEACHING AND JURY ACTIVITIES

- **HEC Paris** *Jouy-en-Josas, France*
Jury member in Mathematics May 2024 - Jun 2024
 - Member of the jury for the mathematics entrance examination to France's most selective business school.
 - Written and oral examination of candidates.
- **Lycée Louis-Le-Grand, Lycée Turgot** *Paris, France*
Teaching Assitant & Oral Examiner in Mathematics Sep 2022 - Apr 2024
 - Courses and oral examinations "Khôlles" given to students in French "Classes Prépas".

PROJECTS

- **Research Blog** [🌐]
Maintaining the research blog [logB](#), with [Ambroise Odonnat](#). Over 100 subscribers on our mailing list.
- **Convolutional Kernel Network** [🔗]
From-scratch implementation, in Python and CUDA, of the CKN architecture introduced by [Dr. Julien Mairal](#) in [End-to-End Kernel Learning with Supervised CKN](#), J. Mairal. [Blogpost here](#).
- **PET Metabolic Imaging**
Working in pairs with the nuclear medicine physicians. Fine-tuning the very recent SSM model [U-Mamba](#), for PET automatic segmentation.

AWARDS & GRANTS

- **Grant and title** 2021
Ecole Normale Supérieure Paris-Saclay
4-year grant (~ 63k €), as a reward for to the admission to the ENS and obtaining the grade of trainee civil servant.
- **Selective Scholarship** 2025
Imperial College London
Roth scholarship for a potential PhD at Imperial College London.

SKILLS

Languages: French (native), English (fluent), Spanish (intermediate), Japanese (basics).
Code: Proficient in Python, PyTorch, Latex, TikZ, Inkscape...