Omar Bennouna

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EDUCATION

Massachusetts Institute of Technology   Cambridge, MA
PhD and MS in Computer Science   *Sep. 2022 – Dec. 2026 (expected)*
- Affiliated to Laboratory of Information and Decision Systems (LIDS).
- Working with Prof. Asuman Ozdaglar and Saurabh Amin.
- Coursework includes: *Inference and Information, Advances in Computer Vision, Mathematical Programming, Probability Theory, Machine Learning, Algorithms for Inference. Cumulative GPA: 5.0/5.0*

École polytechnique   Palaiseau, France
Bachelor of Science and Master of Science in Applied Mathematics   *Sep. 2019 – May 2022*
- Coursework includes: *Statistics, Introduction to Machine Learning, Optimization and Control, Theoretical Computer science, Introduction to Data Science using C++, Random Event Modeling, Monte-Carlo Methods, Operations Research, Game Theory. Cumulative GPA: 3.94/4.*

Lycée Louis-le-Grand   Paris, France
Classes préparatoires, Mathematics, Physics, Computer Science   *Sep. 2017 – June 2019*
- Two-year post secondary program in advanced mathematics and physics leading to nationwide entrance examinations to the *Grandes Ecoles* for scientific studies. *GPA: 4.0/4.*

RESEARCH INTERESTS

Data-driven decision-making, Optimization for Machine Learning, Deep learning, Contextual Optimization

RESEARCH EXPERIENCE

Massachusetts Institute of Technology   Cambridge, MA
Research assistant with Prof. Asuman Ozdaglar and Prof. Saurabh Amin   *Sep. 2022 - Present*
- Designed a novel contextual optimization algorithm with better theoretical and practical performance than the state of the art, presented at ISMP 2024 and INFORMS annual meeting 2024. [arXiv pre-print](#)
- Working paper: developing algorithms to efficiently collect the most relevant data for minimizing an unknown function or fitting a model.
- Working paper: creating a first-order bilevel optimization algorithm with improved guarantees over the state of the art.

Cornell Tech   New York, USA
Research Assistant with Prof. Omar El Housni and Prof. Huseyin Topaloglu   *April 2022 – August 2022*
- Developed novel state of the art algorithms for assortment optimization problems guaranteeing a $O(\frac{1}{\log n})$-approximation compared to the $O(\frac{1}{n})$ state-of-the-art approximation.
- Earned 1st prize of research internship in Applied Mathematics at École polytechnique.

Ecole polytechnique   Palaiseau, France
Research assistant in the Applied Mathematics Department (CMAP)   *Sep. 2020 – May 2022*
- Working with Prof. Stéphane Gaubert on the exploration of new algorithms to solve the quantum optimal transport problem with better complexity using semi-definite programming.
- Working with Prof . Tony Lelièvre and Prof. Amandne Véber on the behavior of the queue of pending requests on online servers and the probability of their saturation.
- Working with Prof. Charles Ollion on the detection of floating plastic in rivers using deep learning computer vision, in collaboration with the NGO Sufrider.

INDUSTRY EXPERIENCE

HireSweet   Paris, France
Machine Learning Intern   *June 2021 – Sep. 2021*
- A startup that exploits various Machine Learning techniques to help companies recruiting.
- Developed NLP algorithms using Python and language models to extract key information from any type of text and job postings.

Awards

1st prize of research internship in Applied Mathematics, *École Polytechnique*.	2022
Moroccan merit scholarship for outstanding results in entrance examination.	2019
Honorable Mention in national French national Physics Olympiad.	2018
Finalist in Moroccan International Mathematical Olympiad team selection.	2016

Teaching Experience

Lycée Saint-Louis   Paris, France
Teaching assistant in mathematics for undergraduate students   *Sep. 2020 – March 2021*

Collège-Lycée Saint-Charles   Athis-Mons, France
Volunteering as mathematics and physics teacher for high school students with special needs.   *Sep. 2019 – Apr. 2019*

Technical Skills

Languages: French (*native*), Arabic (*native*), English (*Proficient*), Japanese (*beginner*).

Programming: *Proficient:* Python, Pytorch, Gurobi, SQL. *Prior Experience:* C++, Java, OCaml, CSS, PHP, HTML.

Community work

Math&Maroc   Rabat, Morocco
Vice-President   *Oct. 2019 – Present*

- Moroccan NGO aiming at promoting mathematics and science in Morocco. See NGO website
- Helped over 1800 Moroccan students to prepare for the baccalaureate by creating educational content and gathering volunteering teachers.
- Organized multiple nationwide events promoting science and mathematics in Morocco, for example: Math&Maroc Competition, Moroccan Tournament of Young Mathematicians, ThinkAI.

cpge-paradise.com
Mathematics education website for undergraduate students   *Sep. 2018 – Present*

- Author of "Fundamentals of Mathematics in the French preparatory programs", an undergraduate mathematics textbook on Analysis, Topology, Linear Algebra, and probabilities to support students in preparatory programs. Currently more than 5 million views and 34000 active users. The book is available for free here.