ACHRAF BAHAMOU

Quantitative Researcher
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EDUCATION

Columbia University, New York, NY *2018 - 2023*
Doctor of Philosophy in Operations Research, 2023, GPA: 4.19/4.0.
Master of Science in Operations Research, 2019.
Advisors: Prof. Donald Goldfarb and Prof. Omar Besbes
Thesis: Topics in Deep Learning and Data-driven Optimization.

Ecole Polytechnique, Paris, France *2015 - 2018*
Bachelor of Science and Master of Science in Applied Mathematics.
Relevant Courses: Machine learning, Statistics, Times Series Analysis, Stochastic processes and Monte Carlo methods, Optimization, Random modeling, Analysis of Algorithms, Statistical Physics, Quantum Mechanics.

INDUSTRY EXPERIENCE

Jump Trading, Chicago 2022 (June-August)
Quantitative Researcher Intern

- Research, feature engineering, model selection and writing execution algorithms.

Amazon, Seattle 2021 (May-August)
Applied Scientist Intern

- Research on Data-Driven Pricing using Machine Learning.

Google Research, New York 2020 (June-August)
Data Scientist Intern

- Worked with Active-Learning-For-All (ALFA) and Neurosurgeon teams, Google Research NYC.
- Research on active learning gains forecasting.

Hellebore Capital Limited, London 2018 (April-July)
Quantitative Research Intern

- Worked on modeling irregularly spaced trades arrival times using multivariate Hawkes processes.

Air France-KLM, Paris 2017 (June-August)
Data Analyst Intern

- Worked on estimating the unconstrained demand on long-haul flights using machine learning.

SKILLS AND ACTIVITIES

Languages	Arabic (native), French (Bilingual), English (full proficiency)
Programming & Tools	Python(Tensorflow, Pytorch, Numpy, Pandas), Matlab, R, Java, C++
Sports	Soccer, Motorcycling, Futsal, Tennis.

CITIZENSHIP

Citizen of Morocco and France

RESEARCH

Practical BFGS Methods for Training Deep Neural Networks. Joint with D. Goldfarb and Yi Ren.
Accepted paper, Spotlight paper, Neurips 2020.

A Mini-Block Fisher Method for Deep Neural Networks.
joint with Donald Goldfarb and Yi Ren. *Accepted paper, AISTATS 2023.*

Stochastic Flows and Geometric Optimization on the Orthogonal Group. K. Choromanski et al.
Accepted paper, ICML 2020.

Optimal Pricing with a Single Point. joint with Omar Besbes and Amine Allouah.
Published in Management Science. Accepted paper in EC 2021.

Pricing with Samples. joint with Omar Besbes and Amine Allouah.
Published in Operations Research. Accepted paper in EC 2021.

Kronecker-factored Quasi-Newton Methods for Deep Learning.
joint with Donald Goldfarb and Yi Ren. *Preprint, 2021.*

Fast revenue maximization with few experiments. joint with Omar Besbes and Omar Mouchtaki.(Ongoing work).

HONORS AND AWARDS

Deming Center Doctoral Fellowship, 2021 Doctoral fellow

MSOM Best Student Paper Competition 2021, Second place

Meta PhD Research Fellowship, 2022 Finalist

Postgraduate Excellence Scholarship (OCP Foundation), 2018 fellow

French Government Major-Excellence Scholarship

Hassan II Academy of Science and Technology Fellowship
First Prize in The National Open Competition Of Science and Technology - Physics category

TEACHING EXPERIENCE

Columbia Center for Teaching and Learning, Research Assistant *Spring 2020*
Advisor: Yi Zhang. Collaborating with the Center for Teaching and Learning to introduce an auto-grading framework and incorporate digital technology into the teaching environment to facilitate active learning.

Columbia University, Head Teaching Assistant
- **Optimization Models and Methods** IEORE 4004, Spring 2021, MSOR core course.
- **Business Analytics IEOR 4650**, Fall 2019, MSBA course .
- **Simulation IEOR 4404**, Fall 2018, 2020, MSOR core course. IEOR 3404, Spring 2019, 2020.

REFERENCES

Prof. **Donald Goldfarb**
Columbia University
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Prof. **Omar Besbes**
Columbia Business School
ob2105[at]gsb.columbia.edu

Jean-Francois Kagy
Google Research, NYC.
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Yi Zhang
Columbia University
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