Ouail Kitouni

Ph.D. Candidate

Cambridge, MA 02139, USA
✉ kitouni@mit.edu
🌐 okitouni.github.io
okitouni

Education

2019–Present	**Massachusetts Institute of Technology**, *Ph.D. Candidate*, Physics, Statistics, and Data Science joint degree, Nuclear and Particle Experimental Physics Division and The MIT Statistics and Data Science Center
2019	**University of Rochester**, *Bachelor of Science with Highest Distinction*, Physics with Mathematics focus, *GPA: 4.00/4.00* in both

Experience

2023 Fall	**FAIR**, *Incoming Research Scientist Intern*, Meta AI - Fundamental AI Research, NYC
2023 Summer	**MSR**, *Research Intern*, Microsoft Research, Cambridge UK
2022 Summer	**FDL**, *ML Researcher Intern*, The NASA/SETI Frontier Development Lab
2021–Present	**IAIFI**, *Junior Investigator*, The NSF AI Institute for Artificial Intelligence and Fundamental Interactions
2019–Present	**LHCb**, *Ph.D. Researcher*, Large Hadron Collider, European Center for Nuclear Research (CERN)
2018–2019	**DESI**, *Undergraduate Researcher*, Dark Energy Spectroscopic Instrument Collaboration

Selected Publications

[1] *"Expressive Monotonic Networks"*, **ICLR 2023**.

[2] *"Towards Understanding Grokking: An Effective Theory of Representation Learning"*, **NeurIPS 2022 Oral**.

[3] *"NEEMo: Geometric Fitting using a **N**eural **E**stimation of the **E**nergy **Mo**ver's Distance"*, Workshop on Machine Learning and the Physical Sciences **NeurIPS 2022**.

[4] *"Robust and Provably Monotonic Networks"*, Workshop on Machine Learning and the Physical Sciences **NeurIPS 2021**.

[5] *"Controlling Classifier Bias with Moment Decomposition: a method to enhance searches for resonances"*, **Journal of High Energy Physics** 10.1007/JHEP04(2021)07 and the Workshop on Machine Learning and Physical Sciences **NeurIPS 2020**.

[6] *"Lower Bounds for the Laplacian Spectral Radius of an Oriented Hypergraph"*, **Australasian Journal of Combinatorics**. 74(3). 408-422.

[7] *'The Benefits of Lipschitz Networks"*, Submitted to Machine Learning: Science and Technology.

[8] *"NuCLR: Nuclear Co-Learned Representations"*, submitted to The Synergy of Scientific and Machine Learning Modeling Workshop **ICML2023**.

Honors and Awards

2019	**Frank Fellowship**, Awarded to a selection of incoming first-year doctoral students.
2017-2019	**Dean's List**, Awarded based on GPA
2017-2019	**Whipple Science and Research Scholarship**, Awarded based on academic and research excellence.
2018	**U of R Research Presentation Award**, For presenting excellent research at academic conferences.
2015-2017	**Dean's List**, Awarded based on GPA.
2017	**Bailey Scholarship**, Awarded to one outstanding student across the departments of physics, mathematics, chemistry, and biology.
2017	**Harvard House Award**, Awarded to top student in the Physics department.
2017	**Interdisciplinary Award**, Awarded to top student interested in interdisciplinary research in applied mathematics.
2015-2017	**Honors Scholarship**, Merit scholarship awarded to top incoming first-year students every fall semester.
2016-2017	**Integration Bee Gold Medal**, Competition at SUNY Brockport's Mathematics department (2016/2017).
2014	**Cirta-Science 1ˢᵗ Place**, High school science competition in Algeria.

Languages Native Level **Arabic**, **French**, **English**