

Gabriel Moryoussef

PHD STUDENT IN STATISTICS AND MACHINE LEARNING AT CMU

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Education

Carnegie Mellon University

Pittsburgh, USA

DOCTORATE (PHD) IN STATISTICS AND MACHINE LEARNING

Aug. 2022 - Dec. 2026 (Expected)

- Advisor: Jiashun Jin
- TA: 46-925 - Financial Data Science III
- TA: 36-402 - Advanced Methods in Data Analysis
- TA: 46-924 Natural Language Processing (for the M.S. in Computational Finance program)
- TA: 46-926 Statistics and Machine Learning (for the M.S. in Computational Finance program)

Ecole Normale Supérieure Paris-Saclay

Paris, FR

MASTER (MSC) IN MACHINE LEARNING, MATHEMATICS-VISION-APPRENTISSAGE (MVA)

Oct. 2021 - Aug. 2022

University of Oxford

Oxford, UK

MASTER (MSC) IN MATHEMATICAL SCIENCE (OMMS)

Oct. 2020 - Jun. 2021

- Thesis: "Persistent Homology of Knotted Proteins", Supervisors: Ulrike Tillmann, Heather Harrington, Agnese Barbensi

Imperial College London

London, UK

BACHELOR (BSC) IN MATHEMATICS

Oct. 2017 - Jun. 2020

- First Year Research Project: "Study of the dirichlet eigenvalues on the rectangle" (89%)
- Second Year Research Project: "Filters and their applications" (83%)

Publications

[1] K. Benjamin, L. Mukta, **G. Moryoussef**, C. Uren, H. A. Harrington, U. Tillmann, and A. Barbensi, "Homology of homologous knotted proteins," *Journal of the Royal Society Interface*, 2023, [paper].

[2] J. Jin, T. Ke, **G. Moryoussef**, J. Tang, and J. Wang, "Improved algorithm and bounds for successive projection," *ICLR*, 2024.

Skills

Programming Python, Fortran, Matlab, R, SQL, Unix, Pytorch, Pandas, Git

Experience

EMBL-EBI

Cambridge, UK

RESEARCH SCIENTIST INTERN

Apr. 2022 - Aug. 2022

- Studied elastic shape analysis of parametric curve in a data driven approach
- Learned a Shape Space using a Variational Auto-Encoder (VAE) that resulted in a cluster accuracy of 89%
- Improved the previous learned embedding by adding a contrastive loss
- Maintained the code clean and documented by committing regularly on the project's Github repository

Jedha bootcamp

Paris, FR

DEEP LEARNING INSTRUCTOR

Jul. 2022 - Aug. 2022

- Taught the deep learning and data analytics modules of the Jedha bootcamp Fullstack
- Explained challenging concepts such as CNN, LSTM, RNN, Transformers

Amazon

London, UK

RESEARCH SCIENTIST INTERN

Jul. 2021 - Dec. 2021

- Performed data processing, feature extraction, exploratory data analysis and built machine learning models to optimize Net Zero defect
- Compared statistics of the different ML models to select the most suited one for deployment (Xgboost)
- Deployed my models in production to create daily prediction, reducing the defect rate by 80%

University of Oxford

Oxford, UK

RESEARCH ASSISTANT

Jun. 2021 - Oct. 2021

- Conducted research among three fellow classmates under the guidance of Pr. Ulrike Tillmann
- Explored structural and geometrical properties of proteins using Persistent Homology, a tool from Topological Data Analysis

Extracurricular Activity

OTHER LEARNING EXPERIENCES

- **Parimaths**: Lectures at ENS Ulm every weekend for 2 years