# Émile Esmaili

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## Education

**Columbia University** — New York, NY
*M.A. in Applied Statistics & Data Science (QMSS) – GPA: 4.07/4.0* — *Dec 2023*

**Sorbonne Université (Pierre et Marie Curie - Paris VI)** — Paris, France
*BSc. in Mathematics* — *June 2024*

**PSL Research University (Paris-Dauphine)** — Paris, France
*MSc. in Financial Engineering - BSc. in Economics* — *Sept 2020*

## Research Experience

**Columbia University & NASA Goddard Institute for Space Studies** — New York, NY
*Research Intern* — *Fall 2022 - Present*

- Graduate research assistant at NASA GISS and Columbia University's Department of Earth and Environmental Engineering, jointly supervised by Prof. Upmanu Lall and Dr. Michael Puma.
- Topic: Using hierarchical Bayesian models and Hidden Markov Models to explore the driving factors of global migration and develop improved probabilistic projections of bilateral migration flows

**Memorial Sloan Kettering Cancer Center & Columbia University** — New York, NY
*Practicum Data Scientist (Capstone Project)* — *Jan 2023 – May 2023*

- Researched drivers of lower grade brain glioma using machine learning and survival models
- Worked on an image segmentation model for IHC staining based on MSK's proprietary DeepLIIF model

## Work Experience

**Ekimetrics** — Paris, France
*Data Scientist* — *Sep 2021 – May 2022*

- Developed a web-app prototype from scratch that incorporates natural language processing (NLP) tools to detect investment opportunities

## Teaching Experience

**Columbia University** — New York, NY
*Teaching Assistant - Machine Learning for the Social Sciences (GR5073)* — *Sep 2023 – Dec 2023*

- Held weekly recitations and office hours covering the basics of machine learning and graded homeworks

**Columbia University** — New York, NY
*Teaching Assistant - Projects in Advanced Machine Learning (GR5074)* — *Jan 2023 – May 2023*

- Held weekly recitations and office hours covering the basics of applied deep learning and graded homeworks

## Working Papers

- **Modeling Migration Flows with Non-Homogeneous Hidden Markov Models**, Emile Esmaili, Upmanu Lall, Michael J.Puma, Aric Cutuli, Rachata Muneepeerakul. AGU Fall Meeting 2023
- **A Bayesian Hierarchical Framework for Modeling Migration Flows**, Aric Cutuli, Upmanu Lall, Michael J. Puma, Emile Esmaili, Rachata Muneepeerakul. AGU Fall Meeting 2023

## Skills

**Programming:** Python, MATLAB, R

**Frameworks:** PyTorch, Keras, Scikit-learn, CVX, PyMC, Git

**Natural Languages:** French (Native), Farsi (Native), English (Professional), German (Elementary)

## Relevant Coursework

**Analysis:** Topology, Functional Analysis, Complex Analysis, Measure Theory

**Algebra:** Linear Algebra, Bilinear Algebra, Abstract Algebra

**Applied Mathematics:** Convex Optimization, Differential Equations, Numerical Analysis

**Other:** Number Theory, Graph Theory & Combinatorics

**Machine/Deep Learning:** Deep Learning for Computer Vision, Machine Learning, Reinforcement Learning, Speech Recoginition

**Probability & Statistics:** Probability Theory, Statistics, Econometrics, Stochastic Calculus