

# Émile Esmaili

☎ +1 415 740 9561 | @ede2110@columbia.edu | 🐙 GitHub | 🌐 Website | 📍 New York, NY

## EDUCATION

---

<b>Columbia University</b> <i>M.A. in Quantitative Methods in the Social Sciences (QMSS)</i>	New York, NY
<b>Sorbonne Université (Pierre et Marie Curie - Paris VI)</b> <i>BSc. in Mathematics</i>	Paris, France
<b>PSL Research University (Paris-Dauphine)</b> <i>MSc. in Financial Engineering - BSc. in Economics</i>	Paris, France

## RESEARCH EXPERIENCE

---

<b>Columbia University &amp; NASA Goddard Institute for Space Studies</b> <i>Research Staff</i>	New York, NY <i>Jan 2024 - June 2025</i>
<ul style="list-style-type: none"><li>Research staff at the Center for Climate Systems Research supervised by Prof. Michael Puma. and Dr. Andrew Robertson</li><li>Topic 1: Modeling the impact of climate and conflict on food security in early modern Europe using Bayesian multilevel models, econometric contagion models and machine learning</li><li>Topic 2: Calibration of subseasonal-to-seasonal (S2S) rainfall forecasts and drought index prediction with machine learning</li></ul>	
<b>Columbia University &amp; NASA Goddard Institute for Space Studies</b> <i>Research Intern</i>	New York, NY <i>Sep 2022 - Dec 2023</i>
<ul style="list-style-type: none"><li>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.</li><li>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</li></ul>	
<b>Memorial Sloan Kettering Cancer Center &amp; Columbia University</b> <i>Practicum Data Scientist (Capstone Project)</i>	New York, NY <i>Jan 2023 - May 2023</i>
<ul style="list-style-type: none"><li>Researched drivers of lower grade brain glioma using machine learning and survival models</li><li>Worked on an image segmentation model for IHC staining based on MSK's proprietary DeepLIIF model</li></ul>	

## CONFERENCE PAPERS

---

- **Modeling Human Migration with Non-Homogeneous Hidden Markov Models: an Application to Inter-state Mobility in the United States**, Emile Esmaili, Upmanu Lall, Michael J.Puma, Aric Cutuli, Rachata Muneeppeerakul. AGU Fall Meeting 2023
- **A Bayesian Hierarchical Framework for Capturing Preference Heterogeneity in Migration Flows**, Aric Cutuli, Upmanu Lall, Michael J. Puma, Emile Esmaili, Rachata Muneeppeerakul. AGU Fall Meeting 2023  
arXiv:2412.01242

## WORKING PAPERS

---

- **Violent Warfare Ignited Price Contagion Dynamics in Early Modern Europe**, Emile Esmaili, Michael Puma, Francis Ludlow, Eva Jobbova, arXiv:2411.18978
- **Compounding Effects of Harsh Climate and Societal Disruptions on Food Prices in Early Modern Europe**, Emile Esmaili, Michael Puma, Francis Ludlow, Eva Jobbova

## 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 applied machine learning

### Columbia University

New York, NY

*Instructor - QMSS Math Camp*

*Sep 2023*

- In charge of the refresher session on single and multivariable calculus for first-year QMSS students

### 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

## WORK EXPERIENCE

---

### Ekimetrics

Paris, France

*Data Scientist*

*Sep 2021 – May 2022*

- Worked on Natural Language Processing (NLP) applications in the financial sector

## SKILLS

---

**Software:** Python, MATLAB, R, Git, L<sup>A</sup>T<sub>E</sub>X

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