

Alice Lépissier, PhD

Applied Scientist • AI for Climate & Finance

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🔗 [Portfolio](#) • 👤 French citizen, US green card • 📍 Baltimore, Relocating to California

Executive Summary

Technical leader and full-stack ML builder with 14 years shipping production-grade data science systems and scientific applications for high-impact domains. Engineer by nature who applies advanced quantitative methods to solve complex “wicked problems” in climate finance and global policy, now making a deliberate move to industry to work at the cutting edge of AI innovation.

Unique value proposition: Rare combination of deep technical expertise (PhD-level statistician, 4.0 GPA), domain fluency in climate/ESG/finance, and cultural bridge-building skills. Trilingual leader who excels at translating sophisticated AI capabilities into business strategy and stakeholder impact. Seeking senior technical roles where advanced ML can reshape problem spaces and drive systemic change.

Core philosophy: “I’m happiest when I’m coding”. Passionate about building, shipping, and scaling AI systems that work. Obsessed with technical excellence, methodological rigor, and polished products that transform cutting-edge research into practical solutions.

Leadership Experience

Founder & Applied Scientist • Green Finance AI

2024–present

- Designed hundreds of expert-level adversarial evaluation tasks for frontier LLM assessment in economics, statistics, and causal inference, constructing rubrics using strict construct validity principles to achieve target model failure rates; tasks selected by the client for incorporation into benchmark datasets
- Implemented scalable, reproducible data science pipelines in Python and R (entire suite of ML libraries) with versioned datasets and models using DVC and Git
- Architected end-to-end MLOps infrastructure including containerized workflows (Docker), CI/CD with GitHub Actions, and secure deployment in cloud environments (GCP, DigitalOcean); deployed and maintained multi-user scientific computing platforms (JupyterHub, RStudio) with integrated LLM tools
- Designed and delivered GenAI training workshops for economists and researchers
- Led technical consulting on machine learning solutions for external clients, including United Nations

Lead Machine Learning Engineer • Omdena (Global AI Collaboration)

Spring 2023

- Selected from global pool as one of 20 engineers for prestigious AI-for-good initiative; built context-aware chatbot using LangChain, Chroma, and Streamlit for real-time nitrogen optimization

Postdoctoral Fellow • Brown University, Watson Institute

2021–2023

- Led interdisciplinary team of 2 research assistants & 1 developer producing research at the intersection of climate finance, AI, and policy design, affiliated with Climate Solutions Lab and Rhodes Center for International Economics
- Drove adoption of climate AI solutions in decarbonization finance through research synthesis, public speaking, and cross-disciplinary outreach between the climate policy and AI communities

Principal Consultant • Various orgs, incl. United Nations, Tax Justice Network 2015–2020

- Originated novel quantitative methodologies combining investigative statistics with economic modeling to detect illicit financial flows across 190+ countries, creating first-of-its-kind analytical framework
- Led full-stack development of global illicit finance databases from methodology design through production deployment
- Achieved measurable policy impact: research adopted as formal African Union resolution, tool used by customs officials to combat illicit trade across 6 countries

Research Associate • Center for Global Development 2012–2015

- Originated and architected [SkyShares.io](#), climate simulation platform modeling economic and environmental impacts for 150 countries, tool featured in *The Guardian*
- Designed algorithmic modules for carbon budget allocation, market-based emissions trading, and cost-optimization under user-defined climate targets
- Built full-stack application (JavaScript, Node.js, MongoDB) with interactive UI enabling policymakers to explore complex climate scenarios; released open-source code, methodology, and data
- Directed cross-functional team of 3 (engineers, developers, economists); drove policy outreach and research dissemination through papers, public blogs, and direct engagement with government, academic, and civil society stakeholders across Europe

Technical Leadership & Innovation

Full-Stack ML Systems & Infrastructure

- › Full-stack engineering: MLOps (containerized workflows with Docker and DVC, CI/CD with GitHub Actions, cloud computing on GCP and DigitalOcean); reproducibility (end-to-end ML pipelines, rigorous code hygiene, Binder, open-science advocate); front-end and delivery (JavaScript, data viz, interactive UIs, scientific web apps, Streamlit, R Shiny, Jupyter Book, Bootstrap, HTML/CSS); databases (MongoDB, SQL)
- › Scientific computing & machine learning libraries: R, Python (NumPy, Pandas), scikit-learn, XGBoost, PyTorch, Hugging Face, transformers, NLP libraries
- › Master wrangler of messy, heterogeneous data from varied sources: economic databases, administrative records, trade datasets, and thoroughly broken spreadsheets
- › Owns the production cycle from data ingestion and modeling through experimentation, deployment, and infrastructure provisioning (cloud, self-hosted, DNS, reverse proxies)

Applied Machine Learning & Statistical Innovation

- › PhD-trained statistician with broad ML expertise: supervised and unsupervised learning, ensemble methods, non-parametric methods, NLP, neural networks, and deep learning foundations
- › Computational social scientist with deep toolkit in empirical methods: causal inference, econometrics, economic modeling; strong command of both experimental and quasi-experimental identification strategies, and causal machine learning methods for high-dimensional inference
- › Algorithm development: various interpolation tools, custom numerical solvers, genetic algorithms for non-convex optimization and image reconstruction

Open-Source Impact & Contributions

- › 26+ public GitHub repositories with production-ready code, including containerized ML workflows and reproducible science tools
- › 10,000+ reads on technical tools (Bézier spline interpolation), featured in engineering textbook
- › Widely-cited open datasets with DOI citations, including leading measure of financial risk
- › User-friendly technical documentation and training content reaching thousands annually: free online course in quantitative methods with integrated R coding labs and video modules, and a popular GitHub tutorial with top search impressions

Domain Expertise & Thought Leadership

Climate Analytics & ESG (15+ Years Experience)

- › 15+ years climate expertise: from empirical research to real-world applications in decarbonization and sustainable finance, including climate simulation tools and policy-facing technical infrastructure
- › Thought leader: op-ed in *The Guardian*, conference organizer on "Artificial Intelligence and Climate" (AAAI 2023), jury member for international competitions on AI for climate collaboration, 11 publications
- › Instructor: Climate Change AI Summer School (2023, 2024) reaching 3,000+ international participants
- › Award Winner: S&P Global Academic ESG Research Award 2023 for climate-resilient investment strategies

Illicit Finance & Risk Analytics (12 Years)

- › Developed first-of-its-kind statistical frameworks for detecting illicit financial flows across 190+ countries using unsupervised ML, network analysis, and economic modeling
- › Pioneered "investigative statistics" approach combining anomaly detection with domain expertise to surface hidden patterns in adversarial, data-sparse environments
- › Developed the official United Nations Economic Commission for Africa headline numbers on illicit financial flows; contributed to the 2019 UN Financing for Sustainable Development Report
- › Built production databases and replication tools deployed by the Tax Justice Network and UN agencies

High-Impact Policy & Strategic Communications

- › High-level policy advisory to UN agencies, OECD, and UK government on climate change and illicit finance
- › Keynote and invited speaker at international conferences across four continents, including Mila AI Institute, United Nations, American Political Science Association; advisory board member London School of Economics; primary thesis advisor at Brown University
- › Delivered technical training to widely varying audiences (economists, engineers, policymakers); taught 6 graduate and undergraduate courses in business, quantitative methods, and programming at UC Santa Barbara (385 students), consistently receiving **outstanding evaluations** across all contexts
- › Reviewer, Microsoft Climate Change AI Innovation Grants Program (2023, 2024); referee for Climatic Change and other peer-reviewed journals; mentor to early-career data scientists and researchers
- › Multilingual and multicultural: English (fluent), French (native), Spanish (fluent), Italian (intermediate)

Education

PhD Environmental Science & Management • UC Santa Barbara

2021

Dissertation: "A methodological toolkit to understand complex policy problems: applications to climate change and illicit finance" – GPA: 4.0

MA Statistics • UC Santa Barbara

2020

Specialization: Data Science, PhD-level qualifying examinations – GPA: 4.0

MSc Economic History • London School of Economics

2011

Awarded with Merit – equivalent to *magna cum laude*

MSc Economics & Public Policy • Sciences Po Paris & École Polytechnique

2010

Joint degree from France's most prestigious institutions for social sciences and STEM

BA European Social & Political Studies • University College London

2009

Awarded with First Class Honours – equivalent to *summa cum laude*

Seeking senior ML engineering, applied scientist, or technical lead roles where I can remain hands-on while contributing to strategy and product impact. Passionate about using advanced ML to solve hard, meaningful problems in climate, finance, and global risk.