Jaqueline Garcia-Yi, PhD

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Summary

Dynamic data scientist with nearly 20 years of international experience, specialized in environment, rural development, and climate change. My career spans the United Nations (UNEP, UNODC) and German academia, where I have focused on climate change mitigation, impact assessment, and the application of advanced data analytics to sustainable development. I have overseen multi-million-dollar initiatives, led cross-functional teams, and delivered data-driven insights that inform global policy and programming. I develop predictive models, design AI-driven tools, and build intelligent systems—from scalable reporting pipelines to LLM-powered agents—that extract meaning from complex datasets. My work enables organizations to automate analysis, enhance decision-making, and apply cutting-edge data science to real-world sustainability challenges.

Education

ECONOMICS AND ENVIRONMENTAL SCIENCE

Doctor of Economics   *University of Hannover*
                                                   Hanover/Germany

Aug 2005/Sep 2010, In-Person, Full-time & Part-time
Doctoral Thesis on Determinants of Deforestation and Quantitative Impact Assessments of Sustainability Related Projects in the Amazon Rainforest, DAAD Scholarship

Specialization PhD Course in Environmental Valuation   *University of Gothenburg*
                                                                 Gothenburg/Sweden

Nov-2009/ Dec-2009, In-Person, Full-time
SIDA Scholarship

Executive Program in Management of the Environment   Maastricht School of Management
                                                             Maastricht/Netherlands

Sep 2004/ Dec 2004, In-Person, Full-time
NUFFIC Scholarship

Master in Science in Ecology and Environmental Science   University of Maine
                                                                   Maine/USA

Aug 2002/ Dec 2004, In-Person, Full-time
Master Thesis on Environmental Valuation of a Marine Protected Area, Fulbright Scholarship

Food Engineering Undergraduate Degree   UNALM
 Apr 1993/ Dec 1997, In-Person, Full-time   Lima/Peru
Honor Roll

DATA ANALYTICS AND DATA SCIENCE

Master in Data Science   *Harvard University Extension School*
                                                      Massachusetts/USA

Sep 2019/ In Progress, On-line & In-Person, Part-time.
Almost completed (expected completion: Dec 2025), pending one course and thesis.
Specialization in AI. Dean's List

Professional Graduate-Level Certificate in Data Science   *Harvard University Extension School*
Massachusetts/USA

Jan 2020/ Jan 2024, On-line, Part-time
Courses: Data Modeling in Python, Data Science (CNN, RNN), Advanced Data Science (NLP, GANS LLM, MLOPs), and Geospatial Analytics (QGIS)

Professional Graduate-Level Certificate in Data Analytics   *Harvard University Extension School, Massachusetts/USA*

Sep 2019/ May 2023, On-line, Part-time
Courses: Web Programming (JavaScript), Quantitative Social Methods, Advanced Python for AI applications, Remote Sensing Analysis (QGIS and ArcGIS)

MANAGEMENT AND COMMUNICATIONS
Executive Master in Management of International Organizations   *SDA Bocconi Milan/Italy*

On-line & In-Person, Part-time, Oct-2018 / May-2019

Professional Graduate-Level Certificate in Business Communications   *Harvard University Extension School, MA/USA*

On-line, Part-time, Jan 2021/ Dec-2024
Courses: Leadership Communications, Business Rhetoric, and Difficult Managerial Conversations

UN Secretariat Executive Management Program   *UN System Staff College Torino/ Italy*

On-line, Part-time, Aug-2023/ Dec-2023

Work Experience
Co-founder of a Startup Specialized in Bioacoustic Monitoring, July 2024 – To date
Vienna, Austria
Co-founded a startup incubated at Harvard Innovation Labs, focused on empowering communities, especially in vulnerable regions in Latin America, to monitor biodiversity through remote sensing, acoustic technologies, and AI with transparency and integrity, while sustainably unlocking the potential of eco-tourism and biodiversity credits.

Our first pilot project is an AI-powered bird identification and biodiversity monitoring for Yanachaga Chemillen National Park, which covers 122,000 hectares of the Amazon rainforest in Peru, featuring:
- AI-driven sound recognition for automatic bird species identification,
- Geospatial modeling using remote sensing data to predict species distribution,
- Interactive maps tracking habitat changes over time
- An Agentic AI-powered chatbot providing real-time biodiversity insights.

Programme Management Officer (P3 International Staff)
United Nations Environment Programme (UNEP), July 2022 – June 2024
Asuncion, Paraguay
- Oversaw a US$ 80M portfolio spanning 15 UNEP projects—one of the largest in Latin America—enhancing programmatic coherence and impact assessment. Led initiatives focused on reducing deforestation from soy and cattle production, strengthening climate adaptation strategies with local communities, and advancing REDD+ efforts.
- Designed and implemented an interactive (online) monitoring dashboard, covering the components & activities of the projects of UNEP in Paraguay, including maps of the location of

the projects vs protected areas, rivers, indigenous populations, and others in Python, QGIS, Tableu, HTML/CSS and JavaScript
- Identified and worked at strengthening synergies among UNEP projects aiming at achieving large-scale transformations in Paraguay
- Monitored and continuously evaluated the potential impacts of UNEP's project portfolio in Paraguay by using scientific methodologies
- Managed staff and temporarily acted as coordinator of a GCF's US$ 50 million project
- Maintained UN Info and other UN databases
- Contributed to monthly UN Common Team (UNCT) meetings, providing inputs and environmental policy insights to the Common Country Analysis (CCA) and the UN Cooperation Framework with Paraguay
- Coordinated and drafted official UNEP responses to Government and other stakeholder inquiries to UNEP in the country.
- Attended events, delivered speeches, as requested by the UNEP representative (based in Uruguay), as the highest-ranking UNEP staff residing in Paraguay

Research Officer (P3 International Staff)
United Nations Office on Drugs and Crime (UNODC), July 2015 - July 2022
Vienna, Austria
Secured US$ 5M in funding for innovative predictive and spatial analytics research in drug-control strategies in the major illicit-drug crop producing countries (Afghanistan, Myanmar, Bolivia, Colombia and Peru), including:
- Spatio-temporal predictive models for strategic maps for decision-making on drug-control in Afghanistan
- Analysis of socio-economic field surveys and remote sensing data for impact assessments of sustainable development projects in Afghanistan (randomized control trials, difference-in-difference, structural equation models)
- Created monitoring dashboards in QlikView, Tableau & python
- Quantified the number of households cultivating illicit-drug crops and beneficiaries of alternative development projects, using census and remote sensing analysis (Myanmar, Afghanistan & Latin America)
- Quantitative and qualitative assessments of income changes before and after implementing alternative development projects (Colombia & Afghanistan)
- Opium poppy yield analysis using random forest trees, artificial intelligence, and machine learning algorithms in python for Afghanistan
Wrote a proposal and obtained funding for evaluating the impacts of illegal mining on biodiversity using AI and acoustic monitoring in the Amazon rainforest of Latin America.

Statistician (Temporal, P3 International staff)
United Nations Office on Drugs and Crime (UNODC), Aug 2016 - Nov 2016
Vienna, Austria
- Conducted statistical analysis of remote sensing data on illicit-drug crop areas in Myanmar and Afghanistan, and quality control of annual monitoring reports on illicit-drug crop areas in Colombia, Peru and Bolivia.
- Innovated and included new statistical and spatial-econometric data analysis in the annual reports on farmers' motivations for illicit-drug crop cultivation, gender issues, and their association with the SDGs in Myanmar and Afghanistan.
- Developed a comprehensive annual structured field questionnaire covering social, human, economic-financial, physical, natural capitals for Afghanistan and Myanmar.
- Led capacity-building workshops for data collection teams in Myanmar and Afghanistan, training field enumerators and senior trainers on survey methodologies.
- Developed a UNODC's strategy for alternative development.
- Wrote concept notes related to alternative development for submission to donors.

- Presented at the UN Commission on Narcotic Drugs (CND), organized side-events, and contributed to expert meetings.

Research Associate (Post-doc in Food and Environmental Economics)
Technische Universitaet Muenchen, Aug 2012 - Jun 2015
Freising, Germany
- Led the socio-economic component of an international project on impacts of genetically modified (GM) crops worldwide, including Latin America, funded by EU.
- Conducted meta-analysis research using data from scientific and technical papers (discrete response models, censored and truncated regression models, sample selection models, count data models, semi- and non-parametric models, and panel data models).
- Developed a systematic map protocol published in a peer-reviewed journal for synthesizing the environmental economic impacts of GM crops; impacts of GM crops on food security, farmers, consumers, and along the supply chain; and socioeconomic impacts due to coexistence regulations.
- Supervised the work of 3 research assistants, the Master's theses of 10 students, and 3 interns.
- Presented at international conferences and at the project internal and stakeholder meetings.
- Taught master's courses in economics, and attended a Course in Mastering Metrics: Causal Analysis and Effects by Joshua Angrist (Nobel laureate).

Research Associate (Post-doc in Food and Environmental Economics)
Leibniz Universitaet Hannover, Apr 2010 - Jul 2012
Hanover, Germany
- Led the research of an international project on value chain and market incentives for the genetic conservation of native crops in Peru and Bolivia, funded by GIZ.
- Developed the conceptual framework; identified research locations; organised the logistics of the field work; designed and guided the survey conduction; and provided supervision to 2 consultants and to 7 undergraduate and Master's students from Peru, Bolivia and Germany.
- Conducted and presented at conferences applied research using choice experiments (random parameters logit models), experimental auctions (Multi-product Becker-DeGroot-Marschak mechanism); and farmer's and consumers's behavioural economic studies (Poisson models, tobit and probit models with sample selection, and seemingly unrelated regressions).
- Attended the International Development School (University of Utrecht, The Netherlands) and the Experimental Auctions School (University of Bologna, Italy).
- Published 7 scientific articles in high quality peer-reviewed journals

Doctoral Researcher (Environmental and Behavioural Economics)
University of Bonn / Center for Development Research, Aug 2005- Apr 2010
Bonn, Germany
- As a DAAD scholar, conducted & defended a doctoral thesis on behavioural economics, including socio-economic and environmental factors for illicit-drug crop cultivation, and impact assessments of anti-drug policies in the Amazon rainforest of Peru.
- My thesis used statistics & data analytics methods, such as: Cragg models with latent class specification, random parameters, Heckman models, multinomial logit selectivity models, & propensity score matching.
- Took environmental, remote sensing, & economics post-graduate courses at University of Bonn (Germany), CATIE (Costa Rica), University of Gotenburg (Sweden), & Santa Fe's Institute (China)
- Obtained a Research Grant from the Latin American and Caribbean Environmental Economics Program (LACEEP) for field work in Peru
- Presented in multiple international scientific conferences and published 5 peer-reviewed articles in international journals, one was awarded the Emerald Literati Network Awards for Excellence for Outstanding Paper (UK)

Previous jobs (before 2010, Peru):
University Lecturer in Environmental Education (UNMSM) and Food and Environment Specialist at Private Consultancies and the Ministry of Environment (ex- National Institute of Natural Resources) in Peru.

Data Science and Analytics Skills
I have excellent expertise in:

Machine Learning & Deep Learning
- Supervised and Unsupervised Learning (Random Forest, SVM, Gradient Boosting)
- Deep Learning (CNNs, RNNs – GRUs, LSTMs)
- Transformers (BERT, Seq2Seq, BiLSTM-CRF)
- Generative Models (GANs, Autoencoders)

Statistical Analysis & Causal Inference
- Econometrics, Time Series Forecasting, Bayesian Modeling
- Structural Topic Modeling (STM), Causal Inference Techniques
- Tools: Python (Jupyter, VS Code), R, STATA, SPSS, SAS, eViews

Big Data, Cloud Platforms & DevOps
- Cloud Computing: Microsoft Azure, Google Cloud Console, Google Earth Engine
- Distributed Computing Workflows for Large-Scale Data
- Containerization and Orchestration: Kubernetes, Docker
- Continuous Integration/Continuous Deployment (CI/CD): GitLab, GitHub Actions, Ansible

Geospatial Analytics & Remote Sensing
- GIS Tools: ArcGIS, QGIS, GeoDa
- Satellite Image Analysis, AI for Ecological Monitoring
- Google Earth Engine for Remote Sensing Applications

Data Engineering & Databases
- SQL, Transact-SQL
- ETL Pipelines, Data Cleaning and Preprocessing for AI Applications

Data Visualization, Web Development & Programming
- Interactive Dashboards: Power BI, Tableau, QlikSense
- Web-Based Visualization: JavaScript, HTML/CSS
- Data Visualization Libraries: Plotly, Seaborn, Matplotlib

Prompt Engineering & Conversational AI
- Prompt Design and Optimization for LLMs
- LangChain, LLM Fine-Tuning, Chatbot Prototyping
- Conversational Agent Development, AI API Integration

Mixed-Methods Research & Applied AI for Social Impact
- SenseMaker® for Qualitative Data Analysis
- Integration of Survey Data for Applied AI Projects

Languages

English (advanced level), Spanish (native), and German (intermediate level)

Publications in Peer-Reviewed Journals

- Garcia-Yi, J. 2017. "Building resilience to opium poppy cultivation by strengthening the design of alternative development interventions: evidence from Afghanistan" United Nations Bulletin on Narcotics. Vol LXI.
- Garcia-Yi, J. 2015. "Drugs and protected areas: coca cultivation and social acceptance of Bahuaja-Sonene National Park in Peru". Sustainability 7(6), 7806-7832.
- Garcia-Yi, J. 2015. "Willingness to pay for organic and Fairtrade certified yellow chili peppers: evidence from middle and high income districts in Lima, Peru". British Food Journal 117(2): 929-942.
- Garcia-Yi, J.; Lapikanonth, T; Vionita, H; Vu, H; Yang, S; Zhong, Y; Li, Y; Nagelschneider, V; Schlindwein, B; and Wesseler, J. 2014. "What are the socio-economic impacts of genetically modified crops worldwide? A systematic map protocol". Environmental Evidence 3(24).
- Garcia-Yi, J. 2014. "Heterogeneous farmers' motivations for growing coca. The case of an Aymara indigenous community in Peru". International Journal of Drug Policy 25(6): 1113-1123.
- Garcia-Yi, J. 2014. "Market-based instruments for the conservation of underutilized crops: in-store experimental auction of native chili products in Bolivia". Sustainability 6, 7768-7786. (Special issue on Challenges for Marketers in Sustainable Production and Consumption).
- Garcia-Yi, J. 2014. "Social control and traditional coca uses as supply-side harm reduction strategy. The case of an indigenous community in Peru". Iberoamerican Journal of Development Studies 3(1), 58-82.
- Garcia-Yi, J. 2014. "Organic coffee certification in Peru as an alternative development oriented drug control policy". International Journal of Development Issues 13 (1), 72-92.
- Garcia-Yi, J. 2014. "Identification of dried native chili markets in the international tourism sector in Peru: an open-ended contingent valuation study". Sustainability 6, 1093-1106. (Special issue on Reframing Sustainable Tourism).
- Garcia-Yi, J. 2014. "Market participation and agro-biodiversity loss: The case of native chili varieties in the Amazon rainforest of Peru". Sustainability 6, 615-630.
- Kohl, C; Craig, W; Frampton, G; Garcia-Yi, J; van Herck, K; Kleter, G; Krogh, P; Meissle, M, Romeis, J; Spoek, A; Sweet, J; Wilhelm, R; and Schiemann, J. 2013. "Developing a good practice for the review of evidence relevant to GMO risk assessment". IOBC-WPRS Bulletin 97, 55-62.
- Garcia-Yi, J. 2013. "Segmentación del mercado de ajíes nativos mediante modelos Poisson y probit ordenados en Lima Moderna, Perú". Agroalimentaria 19 (37), 91-108.
- Garcia, A. and Garcia-Yi, J. 2013. "Oportunidades de bio-comercio y preferencias de los hogares por atributos diferenciados de ajíes nativos sub-utilizados en Lima Moderna, Perú". Latin American Journal of Business Management 4(1), 272-291.
- Olivera, M. and Garcia-Yi, J. 2013. "Promoción de la conservación de la biodiversidad mediante el aumento de la demanda interna de ajíes nativos en Bolivia". Avances en Investigación Agropecuaria 17(2), 57-63.
- Garcia-Yi, J. & Grote, U. 2012. "Data collection: experiences and lessons learned asking sensitive questions in a remote coca growing area in Peru" Survey Methodology 38(2),131-142.

Author of Official UN Publications

Under Which Conditions Does Alternative Development Create Sustainable Income and Livelihoods for Farmers? (UNODC, 2023), Global Overview of Alternative Development Projects (UNODC, 2019), Contributor to the World Drug Report, the flagship publication of UN Office on Drugs and Crime (from 2015 to 2022).

Awards

- Outstanding Paper by the Emerald Literati Network Awards for Excellence, UK, 2015
- SIDA Scholarship, Sweden, 2009
- LACEEP Grant, Costa Rica, 2007
- DAAD Scholarship, Germany, 2005-2010
- NUFFIC Scholarship, The Netherlands, 2004
- Fulbright Scholarship, USA, 2002-2004
- BMUB Scholarship, Germany, 2001
- AECI Scholarship, Spain, 1998

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