

# Iván Higuera-Mendieta

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STANFORD, CA

- EDUCATION**
- Stanford University**, Earth System Science PhD (C) **2021-08 – PRESENT**  
*Committee:* Marshall Burke, David Lobell, and Alexandra Konings  
*Awards:* Stanford Data Science Scholar; Ram and Vijay Shriram Sustainability Fellowship  
*Coursework:* Computer vision, machine learning, meta-learning, causal inference, optimization
- Universidad de los Andes**, BS Economics & Political Science **2008-07 – 2015-04**  
*Awards:* Thesis Honors; Data Science for Social Good Fellowship (University of Chicago ≈ 4% acceptance rate)
- WORK EXPERIENCE**
- ECHO Lab - Stanford University**, Stanford, CA **2021-08 – PRESENT**  
*PhD Candidate - PI: Marshall Burke* Python (rasterio, xarray, pytorch), SQL
- Causally quantify the emissions trade-offs of prescribed burnings in California using satellite data of fire behavior and a novel synthetic control approach.
  - Fine-tune CLIP multimodal (vision-language) architectures to house burning classification in California wildfires (2010-2020) using NAIP aerial imagery and different tabular data passed as text prompts. This project was presented at NeurIPS 2023.
  - Train image embedding representations using Planet’s basemaps for wealth and economic activity measurement. These are inputs to improve the efficiency and cost of large randomized control trials in Eastern Africa.
- Climate Impact Lab - University of Chicago**, Chicago, IL **2019-02 – 2021-07**  
*Research Fellow - Advisor: Sol Hsiang (UC Berkeley)* Python (dask, xarray), HPC (OpenMPI)
- Conceptualize and build a Python library to assimilate climate simulation data (> 10 TB). This pipeline reduced modeling time by almost 50% by relying on modern data chunking techniques not available in native NetCDF formats.
  - Build tools to containerize execution environments in HPC systems using Singularity and Kubernetes when relying on Google Compute.
  - Integrate numerical modeling and causal inference models processing from Matlab and Stata/R into a single pipeline in Python.
  - Develop workflows in Airflow and Luigi to automate manual scraping of energy grid data in the US to build a energy load tracker during the COVID-19 pandemic.
- Data Science and Public Policy Lab - University of Chicago**, Chicago, IL **2018-02 – 2019-02**  
*Data Scientist - Advisor: Rayid Ghani (CMU)* Python (sklearn, tensorflow), SQL, AWS
- Build a pipeline to predict illegal fishing using high-resolution satellite imagery and high-latency AIS vessel data as part of the Data Science for Social Good Fellowship.
  - Develop a Python module to evaluate and diagnose the results of tree-based ML models applied to recidivism and HIV retention care.
  - Train supervised ML models to help physicians predict readmission of diagnosed heart failure patients using high-frequency sensors and electronic health record data.
- Central Bank of Colombia - Research Unit**, Bogotá, Colombia **2015-11 – 2017-11**  
*Research Analyst* Python, R, GDAL
- Process remote sensing data to quantify the causal impact of illegal activities on economic development and environmental degradation. We published this work in a top field journal.

SELECTED  
RESEARCH

**Languages:** Python (rasterio, xarray, pytorch, geopandas), R, PostgreSQL, C++17  
**Cloud Computing:** AWS (S3, RDS, EC2, Lambda), GCP, and HPC