

CONTACT
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<http://corneliailin.github.io>**Citizenship: U.S. permanent resident**

PROFILE

Faculty in AI/ML at UC Berkeley with 12 years of experience in academia, industry, and consulting. Doing research at the intersection of health and environment, employing a wide variety of **geospatial**, **statistical**, and **ML/NLP** methods. Teaching applied ML classes to MS students in the School of Information at UC Berkeley.

- Experience with supervised and unsupervised machine learning algorithms (incl., deep neural networks such as FNN, CNN, RNN/LSTM, Transformers), causal inference, geospatial analysis, temporal record linkage of vital records and hospital data
- Computer languages include **Python**, GIS, SQL, Bash shell; version control with Git(Hub)
- Experience with **big data analytics**: analyzed data using Hadoop/HDFS and Dask frameworks on CloudLab.us clusters and Google Cloud Platform
- Experience with packages such as TensorFlow2, SHAP for explainable AI, Scikit-Learn, Statsmodels, Geopandas, OSMnx, Rasterio
- Experience with IRB applications and working with **HIPAA protected** health data, including claims and electronic health records (EHR, e.g., diagnosis, lab values, clinician notes, images).
- 2 years of **industry and consulting experience** with contributions to high-profile litigation cases in the healthcare industry
- Presentation and writing skills (I attend conferences and write papers for journal publications). Collaboration skills (direct interaction with faculty, postdocs, and graduate students). Highly rated Data Science lecturer.

PROFESSIONAL AND
RESEARCH
EXPERIENCE**UC-Berkeley**, School of Information, **Faculty in AI/ML**

2021 - present

- Research on maternal and child health: The effects of pollution exposure in-utero and first years of life on the likelihood of a couple of conditions in one's hospital/ER visit later in life. Includes personalized interpretations of predictions using diagnosis embeddings and SHAP.
- Data: EHR, vital statistics, atmospheric and wildfire data
- Methods: NLP (BERT) model for predictive analysis, causal analysis
- Teaching: Applied Machine Learning, Capstone (final research project class)
- Topics: linear regression, logistic regression, random forests, unsupervised learning (clustering and dimensionality reduction), deep networks (FNN, CNN, RNN/LSTM, Transformers), embeddings, transfer learning, model interpretability and fairness

Stanford University, RegLab, **Research Scientist**

2021 - 2022

- Project (in partnership with the EPA): explore how machine learning can be used to protect human health with a focus on environmental justice and health outcomes in California.
- Data: Satellite imagery to detect Concentrated Animal Feeding Operations (CAFOs), atmospheric data (wind patterns from NASA's MERRA-2 product), water pollutant discharge monitoring data (ICIS-NPDES), hospital/ER data (CDPH), census tract data (Geolytics Neighborhood Change Database)

- Methods: CNN for time series satellite images classification to detect building construction and/or expansion, causal inference with instrumental variables

UC-Berkeley, School of Information, Postdoctoral Fellow

2020 - 2021

- Advisor: Joshua Blumenstock, Ph.D.
- Project 1: Provide real-time feedback for managing the spread of COVID-19 at local, national, and global scale. Focus on the impact of non-pharmaceutical policies on human mobility, and the usefulness of cellphone data in predicting the spread of the pandemic.
- Project 2 (Cost-Benefit analysis in partnership with the CDC): Empirically estimate the impact of changes in non-pharmaceutical policy interventions, mobility, and other avoidance behaviors on growth rate of COVID-19 cases, COVID-19 deaths, and economic output for all countries in the world where GDP data is available.
- Data: COVID-19 cases and deaths, aggregate-level cellphone data (Google, Facebook, Safe-Graph); individual-level human mobility data (InfoGroup), non-pharmaceutical policy interventions (CDC), quarterly GDP data.
- Methods: Causal inference, predictive analysis.

UW-Madison, Department of Applied Economics, Faculty Associate

2018 - 2020

- Teaching: Object Oriented Programming and Data Analytics with Python; Practicum for Applied Economists; Quantitative and Applied Economics Seminar.
- Topics: Data types, functions, classes, exceptions, IO files, data visualization, descriptive statistics, causal inference, cloud computing (incl. Bash), GIS with Python.
- Assistant Program Director: M.S. in Quantitative and Applied Economics program.

Analysis Group, Inc., Menlo Park, CA, Associate Economist

2017 - 2018

- Litigation consulting: Contributed to several high-profile litigation cases in the healthcare industry (e.g., Des Roches, et al. v. Blue Shield and Magellan).
- Research: Contributed to manuscripts and posters documenting the effectiveness of Leptin Replacement Therapy in treating Generalized and Partial Lipodystrophy.
- Data: Claims (mental health, substance abuse, orthopedics), quasi-experimental and survey.
- Methods: Surveys, discrete choice analysis (multinomial logistic and hierarchical Bayesian regressions), matching algorithms, Cox hazard models.

UW-Madison, Department of Applied Economics, Research Assistant

2012 - 2017

- Advisor: Guanming Shi, Ph.D.
- Projects: Modeled and analyzed the effect of competition and structural market changes on price dispersion in markets with firm capacity constraints and consumer brand loyalty. Explored the evolution of learning and uncertainty in the adoption of new technologies.
- Data: Individual-level data for conventional and genetically modified seed purchases (GFK).
- Methods: Two-stage game theory models, causal inference, quantile regression, instrumental variable, bootstrapping, structural estimation, myopic v. dynamic Bayesian learning models.

University of Zürich, Department of Economics, Research Assistant

2011

EPFL, Department of Computer Science, Research Assistant

2010

DHL European Headquarters, Belgium, Intern

2009

EDUCATION	UW-Madison, Ph.D. in Applied Economics	2012 - 2017
	University of Lausanne, Switzerland, M.S. in Economics	2009 - 2011
	Academy of Economic Studies of Bucharest, Romania, B.S. in Economics	2004 - 2008
JOURNAL PUBLICATIONS	Public Mobility Data Enables COVID-19 Forecasting and Management at Local and Global Scales (<i>Nature - Scientific Reports</i> , volume 11, article number: 13531, with S. Annan-Phan, X.H. Tai, S. Mehra, S. Hsiang, J. Blumenstock, 2021).	
	Global Health and Economic Impacts of Behavior Change During the COVID-19 Pandemic (<i>under review</i> , <i>Nature</i> , with J. Tseng, K.C. Coy, A.C. Ewing, T. Chong, S.M. Marks, I. Bolliger, N.M. Gonzalez, K. Bell, A.J. Hakim, S. Hsiang, 2021)	
	Evolution of Learning in Technology Adoption: The case of the U.S. Soybean Seed Industry (<i>under review</i> , <i>PLOS One</i> , with G. Shi, 2021).	
	Competition, Price Dispersion and Capacity Constraints: The Case of the U.S. Corn Seed Industry, <i>European Review of Agricultural Economics</i> , 2021 (with G. Shi).	
	in preparation: BERT for Disease Prediction Later in Life Using Maternal and Child Electronic Health Records. The Role of Birth and Contemporaneous Pollution Exposure on Respiratory and Cardiovascular Conditions. Evidence from California (with D. Phaneuf, 2019).	
MANUSCRIPTS AND POSTERS	Longitudinal Matching. A Method for Generating Comparable Samples of Treatment and Treatment-Naive Patients with Progressive Conditions (Analysis Group Inc., 2018).	
	Effect of Leptin Replacement Therapy on Survival and Disease Progression in Generalized and Partial Lipodystrophy (study funded by Aegerion Pharmaceuticals Inc., 2018).	
	Patient Quality of Life and Benefits of Leptin Replacement Therapy in Generalized and Partial Lipodystrophy (study funded by Aegerion Pharmaceuticals Inc., 2018).	
TEACHING EXPERIENCE	UC-Berkeley: Lecturer, Capstone: 2022 Lecturer, Applied Machine Learning: 2020, 2021, 2022	
	UW-Madison: Lecturer, Practicum for Applied Economists: Fall 2019 Lecturer, Object Oriented Programming and Data Analytics with Python: Summer 2019 Lecturer, Quantitative and Applied Economics Seminar: Spring 2019 TA, World Hunger and Malnutrition: Spring 2017 TA, Applied Econometric Analysis I: Fall 2016 TA, Applied Microeconomic Theory: Fall 2014 Lecturer, Math Camp for Incoming M.S. and Ph.D. Students: Summer 2014	
FELLOWSHIPS, SCHOLARSHIPS AND GRANTS	Research Grant, American Bar Association, Section of Antitrust Law, 2016 Ph.D. Summer Program (competitive), Edgeworth Economics, Washington, DC, 2016 Kenneth and Pauline Parsons Graduate Fellowship Fund, UW-Madison, 2016 Best Paper Presentation Award, UW-Madison, 2016 SASC Graduate Funds, University of Lausanne, 2010 - 2011 Hessen Summer School (competitive), Goethe University of Frankfurt am Main, Germany, 2008	

WU Summer School (competitive), Vienna University of Economics and Business, Austria, 2007
Excellency in Research Award, Academy of Economic Studies of Bucharest, Romania, 2007

SEMINAR AND
CONFERENCE
PRESENTATIONS

Stanford Maternal and Child Health Research Institute Symposium, 2021
Association of Environmental and Resource Economics, 2020
UW-Madison, Healthcare Economics Group seminar, 2019
University of Connecticut, Department of Economics, 2017
European Association for Research in IO (Rising Stars section), Lisbon, Portugal, 2016
Agricultural and Applied Economic Association Meeting, Boston, Massachusetts, 2016
UW-Madison, Department of Economics, IO seminar, 2016

PROFESSIONAL
ACTIVITIES

Reviewer for Nature Scientific Reports, 2022 - present
Reviewer for the American Public Health Association (APHA), 2019 - present
Social Chair, THC Club of AAE Department, UW-Madison, 2015 - 2016
Seminar Organizer, THC Club of AAE Department, UW-Madison, 2014 - 2015

LANGUAGE SKILLS

Romanian (native), English (fluent), French (basic)