Luna Yue Huang

Development Economics | Geospatial Machine Learning

Interested in applying deep learning methods on satellite images to track global poverty and evaluate policies in international development.

CONTACT

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EDUCATION

UC BERKELEY

PhD in Development Economics
GPA: 3.8
Expected May 2021 | Berkeley, CA
Advisors: Edward Miguel & Marco Gonzalez-Navarro

PEKING UNIVERSITY

BA in Economics & BS in Environmental Sciences
May 2016 | Beijing, China

COURSEWORK

Applied Econometrics II/III
Applied Machine Learning
Probability and Statistics
Development Economics I/II
Applied Industrial Organization
Economic Theory (Micro & Macro)

SKILLS

Python (& PyTorch) • R

STATA • Matlab • SQL • QGIS
Bash • LaTeX • Markdown • Git

REFERENCE

Edward Miguel
Professor of Economics, UC Berkeley
emiguel@berkeley.edu

Marco Gonzalez-Navarro
Associate Professor of Agricultural and Resource Economics, UC Berkeley
marcog@berkeley.edu

Solomon Hsiang
Associate Professor of Public Policy, UC Berkeley
shsiang@berkeley.edu

SELECTED RESEARCH

Understanding the Effects of Climate Change on Mass Migration Using 1.6 Million Historical Aerial Photographs

work in progress, joint with Solomon Hsiang, Andreas Madestam, Anna Tompsett, Hannah Druckenmiller, Nicklas Nordfors, and Trinetta Chong

- Constructs the first historical high-resolution population and land use map of 27 developing countries from the 1940s onward, using an archive of 1.6 million historical aerial photographs originally taken to map the former British Empire.
- Uses state-of-the-art machine learning classification and segmentation techniques to identify houses, roads, agricultural lands and forests to study the effects of droughts, hurricanes and other changes in climate on population settlement and economic development patterns over 80 years.

Beyond Nightlight: Using Daytime High-Resolution Satellite Images in Economics

work in progress

- Develops a methodology that uses a machine learning model (Mask RCNN) to extract signals on housing quality from satellite images, and constructs high-resolution poverty maps across developing countries where survey or census data are scarce.
- Causally estimates the effects of cash transfers from a US charity (GiveDirectly) and obtains consistent results with extensive in-person surveys.
- Successfully validates the poverty and inequality estimates against traditional economic censuses in Mexico.

PUBLICATION

- Using randomized controlled trials to estimate long-run impacts in development economics. Joint with Adrien Bouguen (Santa Clara), Michael Kremer (Harvard, 2019 Nobel laureate), and Edward Miguel (UC Berkeley). *Annual Review of Economics*, 11(1): 523-561, 2019.

TEACHING

SPATIAL DATA AND ANALYSIS (IN PYTHON)

[GSPP 275] Fall 2019 | MPP/MPA/PhD Level, UC Berkeley

INTERMEDIATE MICROECONOMICS

[MBA 201A] Fall 2018 | MBA Level, UC Berkeley

AWARDS AND GRANTS

2018	East Africa Social Science Translation Collaborative Mentor Grant, Center for Effective Global Action, UC Berkeley
2015	Academic Creativity Award, Peking University
2013–15	Bajian Rencai Scholarship, Peking University
2014	Mao Yugang Foundation Grant for Undergrad Research
2013–14	Wusi Scholarship, Peking University