Ben Green

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Interests

Data, algorithms, and social justice
The use of data and technology in municipal government

Affiliations

Berkman Klein Center for Internet & Society at Harvard
Fellow — 2016 – Present

Education

Harvard University
PhD in Applied Mathematics — 2020 (expected)
MS in Applied Mathematics — 2016

Yale University
BS in Mathematics & Physics, with distinction (Cum Laude) — 2014

Grants

Harvard Kennedy School Taubman Center Urban Experience Fellowship — 2016
NSF Graduate Research Fellowship — 2015
DOD National Defense Science and Engineering Graduate Fellowship (declined) — 2015
Herbert Winokur SEAS Graduate Fellowship — 2015
Eric & Wendy Schmidt Data Science for Social Good Summer Fellowship — 2014
Dwight Hall at Yale Urban Fellowship — 2013
New Haven Mayor's Community Arts Grant — 2013
Yale President's Public Service Fellowship — 2013
Alan S. Tetelman 1958 Fellowship for International Research in the Sciences — 2011

Books

Ben Green. *The Smart Enough City: Putting Technology in its Place to Reclaim Our Urban Future*. MIT Press. (In production, forthcoming 2019).

Papers

Ben Green. "'Fair' Risk Assessments: A Precarious Approach for Criminal Justice Reform." *5th Workshop on Fairness, Accountability, and Transparency in Machine Learning (ICML)* (2018).

Ben Green and Lily Hu. "The Myth in the Methodology: Towards a Recontextualization of Fairness in Machine Learning." *Machine Learning: The Debates Workshop (ICML)* (2018).

Ben Green, Thibaut Horel, and Andrew Papachristos. "Modeling contagion through social networks to explain and predict gunshot violence in Chicago, 2006 to 2014." *JAMA Internal Medicine* 177, no. 3 (2017): 326–333.

Ben Green, Gabe Cunningham, Ariel Ekblaw, Paul Kominers, Andrew Linzer, and Susan Crawford. "Open Data Privacy: A risk-benefit, process-oriented approach to sharing and protecting municipal data," *Berkman Klein Center Research Publication* (2017).

Ben Green, Paul Bardunias, J. Scott Turner, Radhika Nagpal, and Justin Werfel. "Excavation and aggregation as organizing factors in de novo construction by mound-building termites." *Proceedings of the Royal Society B* 284, no. 1856 (2017).

Ben Green, Alejandra Caro, Matt Conway, Robert Manduca, Tom Plagge, and Abby Miller. "Mining administrative data to spur urban revitalization." *Proceedings of the 21st ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)* (2015).

Ben Green. "Testing and quantifying collective intelligence," *Proceedings of the Collective Intelligence Conference* (2015).

Talks

"'Fair' Risk Assessments: A Precarious Approach for Criminal Justice Reform," FATML (2018).
"The Myth in the Methodology: Towards a Recontextualization of Fairness in Machine Learning."Machine Learning: The Debates (2018).
"Interrogating the Smart City: The Politics of Machine Learning Algorithms in Municipal Government," Humboldt University of Berlin Faculty of Law (2018).
"Boston Needs a Surveillance Ordinance," Invited Testimony to the Boston City Council (2018).
"AI and Consumer Protection," Berkman Klein Center AGTech Forum (2018).
"The Limits, Perils, and Challenges of 'Fair' Algorithms for Criminal Justice Reform," Berkman Klein Center ThursdAI (2018).
"Epistemological tensions between machine learning & criminal justice," Seton Hall Law School Artificial Intelligence and the Law Conference (2018).
"Travails in CS Academia," Berkman Klein Center Luncheon Series (2018).
"Privacy in the Smart Enough City," Seton Hall Law School Institute for Privacy Protection (2017).
"Developing a Surveillance Ordinance in Cambridge," Invited Testimony to the Cambridge City Council (2017).
"Modeling Contagion Through Social Networks to Explain and Predict Gunshot Violence" National Network for Safe Communities National Conference (2017).
"Protecting Privacy in Boston's Open Data," Analyze Boston Open Data Challenge (2017).
"Open Data Privacy," Talks on Technology Science, Harvard Data Privacy Lab (2017).
"Algorithmic bias: Where it comes from and what to do about it," LibrePlanet (2017).
"Unlocking Geospatial Administrative Data to Improve Public Safety Services" Boston Area Research Initiative Spring Conference (2017).
"Open Data Privacy," City of Cambridge Open Data Review Board (2016).
"Open Data Privacy," Digital Communities Mid-Year CIO Leadership Group Meeting (2016).
"Citizensourcing for Civic Engagement," #Tech4Democracy Showcase and Challenge (2015).
"Mining Administrative Data to Spur Urban Revitalization," KDD (2015).
"Collective Construction of Termite Mounds," SINNERS5Boston (2015).
"Testing and Quantifying Collective Intelligence," Collective Intelligence (2015).
"Better Data to Measure and Predict Blight and Vacancy," Unblight (2014).
"Targeted Investments to Improve Economic Outcomes," Chicago Open Gov Hack Night (2014).

Research Experience

Harvard University
Computer Science Department — Graduate research assistant
Criminal justice algorithms — September 2017 – Present
Studying the social impacts of risk assessments in the criminal justice system.

Berkman Center for Internet & Society — Data governance fellow
Best practices for municipal data governance — January 2016 – August 2017
Developed best practices for how cities manage data and technology. Studied the privacy implications behind open data and developing a framework for assessing privacy risks when sharing data. Provided resources for cities to protect against discrimination when making data-driven decisions. Regularly convened with and presented to municipal leaders.

Yale University
Sociology Department — Research assistant
Gun violence in co-offending networks — January 2014 – January 2017
Studied the structure of criminal networks in eight American cities and identified risk factors for gunshot victims. Analyzed police records on arrests and shootings to model the diffusion of gun violence as an epidemic that spreads from person to person via social interactions. Developed a predictive model for who is at risk to be shot that outperforms traditional approaches.

Harvard University
Computer Science Department — Graduate research assistant

Collective intelligence in termite colonies September 2014 – May 2016
Studying collective intelligence in termite colonies to determine how termites self-organize to collectively construct mounds. Designed experiments and conducted field research in Namibia. Developed simulations to infer the social dynamics in self-organizing groups of termites.

The Eric & Wendy Schmidt
Data Science for Social Good
Summer Fellowship Research fellow
Data mining for urban revitalization June 2014 – August 2014
Worked with the Mayor's Innovation Team in Memphis, TN to identify data-driven strategies for urban revitalization. Developed a machine learning classifier and interactive website to help policymakers and developers identify distressed houses in Memphis.

Yale University
Physics Department Undergraduate senior thesis
Improved sampling of galaxy clustering September 2013 – May 2014
Analyzed and developed algorithms and statistical methods to produce accurate sampling of galaxy clusters for the Dark Energy Spectroscopic Instrument.

Yale University
Mechanical Engineering Department Research assistant
Emergent group behavior of insect swarms September 2013 – January 2014
Studied the emergent behavior and complex dynamics of insect swarms. Used network applications to analyze the interactions between pairs of insects. Measured velocity correlation functions, finding evidence that some pairs of insects chase or follow one another.

CERN Research assistant
Statistical tests to detect elementary particles May 2011 – July 2011
Worked on the ATLAS experiment of the Large Hadron Collider. Analyzed decay patterns of top quarks to search for a Z boson outside of the Standard Model. Conducted statistical analyses of particle collisions, comparing Monte Carlo simulations with recorded ATLAS data.

Professional Experience

City of Boston
Department of Innovation & Technology Data analytics fellow
Municipal data analytics and policy June 2016 – May 2017
Worked for the Citywide Analytics Team analyzing data and developing policies to aid City Departments improve operations and services. Analyzed Fire Department and EMS responses and made recommendations for process improvements, including a pilot program that pairs public health and medical resources to respond to certain incidents. Aided in the development of policies and practices for a new open data portal.

City of New Haven
Department of Transportation Policy intern
Improving transportation efficiency and safety May 2013 – May 2014
Analyzed New Haven's on-street parking regulations and made changes in order to reduce congestion and aid economic development. Coordinated adoption of cellphone payment technology in meters throughout the city. Conceived and initiated process of creating a traffic garden for New Haven. Wrote pedestrian and bicycle safety guides.

Design for America at Yale Team founder and leader
Creating artistic bike racks September 2012 – May 2014
Created a team to promote a more sustainable cycling environment in New Haven. Initiated and ran a program matching local artists and businesses to create three downtown bike racks that double as public art. Received a 2013 New Haven Mayor's Community Arts Grant to fund artistic bike racks throughout New Haven.

Litl, Inc. Research and development intern
Machine learning for computer vision May 2012 – August 2012

Applied machine learning to computer vision for the photo-viewing application Woven. Developed a classifier that could determine whether a picture was taken indoors or outdoors with 90% accuracy. Used techniques such as logistic regression, graph clustering, and Bayesian analysis.

Teaching

Faculty member, UC Irvine Technology, Law, and Society Summer Institute, June 2018.
Course assistant, Harvard Law School Responsive Communities Lab, Fall 2016.
Head teaching fellow, Harvard Computer Science 182: Artificial Intelligence, Fall 2015.
Math and science coordinator, Dwight Hall Academic Mentoring Program at Yale.
Tutor, Yale College Science and Quantitative Reasoning Center.

Service

Program Committee: Conference on Fairness, Accountability, and Transparency (FAT*) 2019
Reviews: MIT Press, Data Mining and Knowledge Discovery, npj Digital Medicine