

Daniel Rock

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Employment

Wharton School, University of Pennsylvania, Assistant Professor
Operations, Information, and Decisions Department, July 2020 - present

Massachusetts Institute of Technology, Postdoctoral Associate
Initiative on the Digital Economy, June 2019 - June 2020

Education

Ph.D., Massachusetts Institute of Technology, 2019

Sloan School of Management

Dissertation: *Essays on Information Technology, Intangible Capital, and the Economics of Artificial Intelligence*

Committee: Erik Brynjolfsson (Chair) (MIT), Andrew Lo (MIT), Chad Syverson (Chicago), Prasanna Tambe (UPenn)

S.M., Massachusetts Institute of Technology, 2016

Sloan School of Management

Thesis: *Estimating Peer Effects in Networked Panel Data*

B.S., University of Pennsylvania, *summa cum laude*, 2010

Wharton School

Concentrations: Finance, Operations and Information Management

Minors: Mathematics, Economics

Refereed Journal Publications

- *The Productivity J-Curve: How Intangibles Complement General Purpose Technologies* (with Erik Brynjolfsson and Chad Syverson) (published in *American Economic Journal: Macroeconomics*, formerly NBER Working Paper No. 25148)

Working Papers

- *Engineering Value: The Returns to Technological Talent and Investments in Artificial Intelligence*
- *Estimating the Distribution of the Impact of Machine Learning on Work* (with Erik Brynjolfsson, Morgan Frank, Tom Mitchell, and Iyad Rahwan)
- *People are our Greatest Asset: Measuring the Market Value of Human Capital* (with Erik Brynjolfsson, Prasanna Tambe, and Jacqueline Barrett)
 - *Finalist, Wharton People Analytics Research Paper Competition*, 2018
- *The Perils of Peer Effects in Networked Observational Panel Data* (with Sinan Aral and Sean J. Taylor)
- *Digital Capital and Superstar Firms* (NBER Working Paper No.w28285) (with Prasanna Tambe, Lorin Hitt, and Erik Brynjolfsson)

- *Part of the Productivity Measurement Initiative Paper Series hosted by the Hutchins Center on Fiscal and Monetary Policy at the Brookings Institute in 2019-2020*
- *Best Paper Runner-Up at CIST 2019*
- *COVID-19 and Remote Work: An Early Look at U.S. Data* (NBER Working Paper No.w27344) (with Erik Brynjolfsson, John Horton, Adam Ozimek, Garima Sharma, and Hong-Yi Tu Ye)
- *Job2Vec* (with Sarah Bana, Erik Brynjolfsson, and Sebastian Steffen)
- *Skill-Biased Technological Change Within and Between Firms: 2000-2016* (with Seth Benzell and Guillermo Lagarda)

Conference Publications, Book Chapters, and Other Writing

- Brynjolfsson, Erik, Seth Benzell, and Daniel Rock. “Understanding and Addressing the Modern Productivity Paradox”. Research Brief for the *MIT Work of the Future Task Force*. 2020.
- Rock, Daniel. “How Managers Can Enable AI Talent in Organizations”. *MIT Sloan Management Review* (part of the AI and Machine Learning Imperative Series). 8/5/2020. Available: <https://sloanreview.mit.edu/article/how-managers-can-enable-ai-talent-in-organizations/>
- Brynjolfsson, Erik, Daniel Rock, and Prasanna Tambe. “How Will Machine Learning Transform the Labor Market” In *Governance in An Emerging New World*, Spring Series, Issue 619. Hoover Institution. 2019.
- Brynjolfsson, Erik, Tom Mitchell, and Daniel Rock. “What Can Machines Learn, and What Does It Mean for Occupations and the Economy?” In *AEA Papers and Proceedings*, vol. 108, pp. 43-47. 2018.
- Brynjolfsson, Erik, Daniel Rock, and Chad Syverson. *Artificial intelligence and the modern productivity paradox: A clash of expectations and statistics*. In *Economics of Artificial Intelligence*. University of Chicago Press, 2018. (NBER Working Paper No. 24001)
- Rock, Daniel, Aral, Sinan and Taylor, Sean. Identification of peer effects in networked panel data. In: *International Conference on Information Systems*. Dublin, Ireland. 2018.
 - International Conference on Information Systems: Best Paper (2nd Runner-Up), 2016

Research Affiliations

MIT Initiative on the Digital Economy
Stanford Digital Economy Lab
 LinkedIn - Economic Graph Challenge Affiliate Researcher

Grants, Honors, and Awards

- *Wharton Dean’s Research Fund Grant*, 2021
- *Google-Stanford HAI Academic Compute Grant* (for Job2Vec with Sarah Bana, Erik Brynjolfsson, and Sebastian Steffen), 2021
- *Google Academic Cloud Grant* (for Job2Vec with Sarah Bana and Sebastian Steffen), 2020
- *MIT-IBM Watson AI Lab Grant*, 2018
- *MIT Translational Innovation Alliance Grant*, 2018
- *International Conference on Information Systems: Best Reviewer* 2017, 2019
- *Major U.S. Stock Exchange: Market Structure and Integrity Research Data Grant*, 2017-Present
 - Data grant to design and run experiments on U.S. equity markets
- *LinkedIn Economic Graph Research Collaboration*, 2016-Present

- *MIT Sloan Doctoral Fellowship*, 2013-2018
- *Beta Gamma Sigma Business Honors Society*, University of Pennsylvania Chapter, 2010
- *Dean's List*, University of Pennsylvania, 2006-2010

Teaching

Assistant Professor, University of Pennsylvania Wharton School

- Spring 2021: OIDD 101 (An Introduction to Operations, Information, and Decisions), OIDD 469 (Information Strategy and Economics)

Course Developer and Instructor, Propulsion Academy for Data Science, Zurich, Switzerland 2017

- Designed and taught 2 week intensive module on machine learning for Propulsion Academy (first data science bootcamp in Switzerland)

Invited Academic Seminars

- 2020: CMU Tepper
- 2019: Harvard Business School, Stanford GSB, Michigan Ross, Chapman University, University of California Irvine
- 2018: MIT Sloan, Cornell SC Johnson, USC Marshall, University of Pennsylvania, Boston College, University of Washington Foster, University of Texas-Austin McCombs, Tel Aviv University, HBS Digital
- 2017: MIT Sloan, MIT Economics (Organizational Economics Lunch)

Invited Presentations and Attended Workshops

2021-2022 Academic Year:

- *Complex Networks in Economics and Innovation Satellite of Networks 2021*, Virtual (scheduled)
- *OECD Global Forum on Productivity Annual Conference*, Venice, Italy (scheduled)
- *Machine Learning for Consumers and Markets KDD 2021 Workshop*, Virtual (scheduled)
- *Academy of Management Annual Conference*, Virtual (scheduled)

2020-2021 Academic Year (Remote):

- *Brookings Institution Center on Regulation and Markets: AI Conference*, Washington, D.C.
- *Stanford HAI Digital Economy Lab*, Stanford, CA
- *Workshop on Information Systems and Economics (WISE)*, Hyderabad, India
- *American Economic Association Annual Conference*, Chicago, IL

2019-2020 Academic Year (2020 Remote):

- *NBER Economics of Artificial Intelligence Conference*, Toronto, Canada
- *Wharton People and Organizations Conference*, Philadelphia, PA
- *Brookings Institution Productivity Measurement Initiative*, Washington, D.C.
- *Conference for Information Systems and Technology*, Seattle, WA
- *Stanford HAI Conference on AI Measurement*, Stanford, CA
- *Center for Global Enterprise CEO Summit*, Boston, MA

- *Workshop on Information Systems and Economics (WISE)*, Munich, Germany
- *American Economic Association Annual Conference*, San Diego, CA
- *Organization Science Winter Conference*, Monterey, CA (postponed due to COVID-19)
- *MIT EmTech Next*, Boston, MA

2018-2019 Academic Year:

- *Munich Summer Institute*, Munich, Germany
- *Center for Global Enterprise CEO Summit*, Hong Kong, China
- *LinkedIn*, San Francisco, CA
- *Workshop on Information Systems and Economics (WISE)*, San Francisco, CA
- *ICIS 2018 Doctoral Consortium*, San Francisco, CA
- *Joint ECB/CEPR Labour Market Workshop*, Frankfurt, Germany
- *Conference on Information Systems and Technology*, Phoenix, AZ
- *SPRINGBOARD Conference*, Research Triangle Park, NC
- *MIT Initiative on the Digital Economy Seminar*, Cambridge, MA
- *NBER Economics of Artificial Intelligence Conference*, Toronto, Canada
- *European Network on the Economics of the Firm (ENEF) Meeting*, Falmer, Brighton, UK

2017-2018 Academic Year:

- *Academy of Management - Technology and Innovation Management Doctoral Consortium**, Chicago, IL
- *MIT Initiative on the Digital Economy (IDE) Annual Conference*, Cambridge, MA
- *Harvard Business School Digital Initiative Doctoral Student Workshop*, Cambridge, MA
- *Consortium for Competitiveness and Cooperation (CCC)*, Berkeley, CA
- *LinkedIn Economic Graph Research Seminar*, San Francisco, CA
- *Wharton People Analytics*, Philadelphia, PA
- *Burning Glass Technologies Research Seminar*, Boston, MA
- *American Economic Association Annual Conference*, Philadelphia, PA
- *Mitra Biotech*, Woburn, MA
- *MIT Social Analytics Lab Seminar*, Cambridge, MA
- *MIT Organizational Economics Lunch*, Cambridge, MA
- *INFORMS Annual Conference*, Houston, TX
- *NBER Productivity Lunch Seminar*, Cambridge, MA
- *Wharton People and Organizations Conference*, Philadelphia, PA
- *NBER Economics of Artificial Intelligence Conference*, Toronto, Canada
- *UC Berkeley Deep Reinforcement Learning Bootcamp**, Berkeley, CA

*denotes invited attendee

2016-2017 Academic Year:

- *MIT Initiative on the Digital Economy (IDE) Annual Conference*, Cambridge, MA

- *NBER Digitization Winter Meeting Graduate Student Tutorial**, Palo Alto, CA
- *LinkedIn Data All Hands Meeting*, Mountain View, CA Talk: *Building Human Capital Measures with LinkedIn Data*
- *Workshop on Information Systems and Economics (WISE)*, Dublin, Ireland
- *International Conference for Information Systems (ICIS)*, Dublin, Ireland
- *INFORMS Annual Conference*, Nashville, TN
- *MIT Social Analytics Lab Seminar*, Cambridge, MA
- *MIT Innovation Lab Lunch*, Cambridge, MA

2015-2016 Academic Year:

- *MIT Initiative on the Digital Economy (IDE) Annual Conference*, Cambridge, MA
- *MIT Initiative on the Digital Economy (IDE) Seminar*, Cambridge, MA
- *NBER Digitization Winter Meeting Graduate Student Tutorial**, Palo Alto, CA
- *INFORMS Annual Conference*, Philadelphia, PA

Professional Service

Reviewer:

Econometrica, Quarterly Journal of Economics, Management Science, Information Systems Research, MIS Quarterly, American Economic Review: Insights, American Economic Journal: Macroeconomics, National Science Foundation, Israel Science Foundation, Organization Science, Proceedings of the National Academy of Sciences, Labour Economics, Review of Income and Wealth, International Conference on Information Systems, International Conference on Computational Social Science MIT Sloan Sports Analytics Conference

Program Committee:

Conference on Information Systems and Technology (CIST), 2018-21
Associate Editor, International Conference for Information Systems, 2020

Other Experience

- Member, MIT Sloan Management Review Future of the Workforce Advisory Panel
- DRW Trading, LLC, Chicago, IL
Algorithmic Trader - Fixed Income, Currencies, and Commodities, 2011-2013
U.S. Treasury Options Trading Analyst, 2010-2011

Additional

Technical: Python, R, TensorFlow, Keras, PyTorch, SQL, Pig, Spark, Hive, STATA, VBA, MATLAB

Other Personal: Proficient in Spanish, Lifelong Chicago Cubs Fan