Nikhil Garg

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ACADEMIC EMPLOYMENT

Assistant Professor, Operations Research and Information Engineering　　Fall 2021-Present
Jacobs Technion-Cornell Institute
Cornell Tech and Technion - IIT
Field member in ORIE, CS, and IS, Cornell University

Postdoctoral Associate　　2020-2021
University of California, Berkeley
Department of Electrical Engineering and Computer Sciences
Advisors: Christian Borgs, Jennifer Chayes, & Mike Jordan

EDUCATION

Stanford University
PhD, Electrical Engineering　　2020
MS, Electrical Engineering　　2017
Thesis: *Designing Marketplaces and Civic Engagement Platforms: Learning, Incentives, and Pricing*
Advisors: Ashish Goel & Ramesh Johari
Crowdsourced Democracy Team and Society & Algorithms Lab

University of Texas at Austin
BS, Electrical and Computer Engineering, Highest and Special Honors　　2015
BA, Plan II Honors (Liberal Arts)　　2015

SELECTED AWARDS

- INFORMS George Dantzig Dissertation Award, 2020
- ACM SIGecom Dissertation Award (Honorable Mention), 2021
- Forbes 30 under 30 (Science), 2022
- M&SOM Student Paper Award (2nd place), 2020
- INFORMS DEI Student Best Paper Award, 2022
- National Science Foundation Graduate Research Fellowship, 2015-2020
- Stanford McCoy Center for Ethics in Society Graduate Fellow, 2017-2018

INDUSTRY & POLICY EXPERIENCE

PredictWise
Principal Data Scientist　　2020
Senior Scientific Advisor　　2020-Present
Elections analytics for registration, turnout, and persuasion

Uber　　Summer 2018
Data Science Intern, Marketplace
Algorithmic pricing and driver payments

IEEE-USA　　Summer 2015
Technology Policy Associate
Wireless spectrum regulation

Microsoft　　Summer 2014
Software Development Engineering Intern, Bing Ads
Streaming data pipeline for ad analytics

Texas Senate　　Fall 2013
Legislative Intern, State Senator Davis's Legislative Office
Bill research and constituent communications

NASA　　Summer 2013
Research Associate, Glenn Research Center

Multi-modal signal processing to measure attentive cognitive state

Collaboration/consulting: PredictWise, Clipboard Health, Ocurate, Upwork, Jet Blue Technology Ventures, SNCF, DAS Worldwide

TEACHING

Cornell Tech

— ORIE 6217. Applied Bayesian Data Analysis for Research	Spring 2023
— ORIE 5355. Applied Data Science: Decision-making beyond Prediction	Fall 2022
— Break Through Tech AI program	Summer 2022
— ORIE 6170. Engineering Societal Systems	Spring 2022
— ORIE 5355. Data, People, and Systems	Fall 2021

Stanford University

— MS&E 226. Fundamentals of Data Science, *Teaching Assistant*	Fall 2018, 2019
— MS&E Exec Ed. Data Science: An Introduction to Prediction, *Course Design Assistant*	2018-2019
— OIT 521. Data Science for Online Marketplaces, *Teaching Assistant*	Spring 2018

AddisCoder

— Introduction to Computer Science, *Teaching Assistant*	Summer 2019

University of Texas at Austin

— EE 306. Introduction to Computing, *Teaching Assistant*	Fall 2013
— M408C. Integral Calculus, *Teaching Assistant*	Spring 2012

PUBLICATIONS

Working Papers

8. "Detecting disparities in capacity-constrained allocations." Benjamin Laufer, Emma Pierson, and **NG**.

7. "How diverse are accurate recommendations?" Kenny Peng, Manish Raghavan, Emma Pierson, Jon Kleinberg, and **NG**.

6. "Do ratings reflect item quality? Interface experiments on a music discovery platform." Rana Shahout, Yehonatan Peisakhovsky, Sasha Stoikov, and **NG**.

5. "Balancing Producer Fairness and Efficiency via Bayesian Rating System Design." Thomas Ma, Michael Bernstein, Ramesh Johari, and **NG**.

4. "Supply-Side Equilibria in Recommender Systems." Meena Jagadeesan, **NG**, and Jacob Steinhardt.

3. "Equity in Resident Crowdsourcing: Measuring Under-reporting without Ground Truth Data." Zhi Liu and **NG**.

2. "Combatting Gerrymandering with Social Choice: the Design of Multi-member Districts." **NG**, Wes Gurnee, David Rothschild, and David Shmoys.

     Media: *Cornell Chronicle*

1. "Dropping Standardized Testing for Admissions: Differential Variance and Access." **NG**, Hannah Li, and Faidra Monachou.

Journal Articles

5. "Driver Surge Pricing" (2021). **NG** and Hamid Nazerzadeh. *Management Science (MS)*.

4. "Markets for Public Decision-making" (2020). **NG**, Ashish Goel, and Ben Plaut. *Social Choice and Welfare*.

3. "Designing Informative Rating Systems: Evidence from an Online Labor Market" (2020). **NG** and Ramesh Johari. *Manufacturing & Service Operations Management (M&SOM)*.

     M&SOM Student Paper Award (2nd place), 2020

     Media: *New York Times*, *Stanford Engineering Magazine*

2. "Iterative Local Voting for Collective Decision-making in Continuous Spaces" (2019). **NG**, Vijay Kamble, Ashish Goel, David Marn, and Kamesh Munagala. *Journal of Artificial Intelligence Research* (*JAIR*).

1. "Word Embeddings Quantify 100 Years of Gender and Ethnic Stereotypes" (2018). **NG**, Londa Schiebinger, Dan Jurafsky, and James Zou. *Proceedings of the National Academy of Sciences* (*PNAS*).

    Media: *Science Magazine*, *Smithsonian Magazine*, *Stanford News*

Peer Reviewed Conference Proceedings

17. "Equity in Resident Crowdsourcing: Measuring Under-reporting without Ground Truth Data." Zhi Liu and **NG**. *ACM Conference on Economics and Computation* (*EC '22*).

16. "Combatting Gerrymandering with Social Choice: the Design of Multi-member Districts." **NG**, Wes Gurnee, David Rothschild, and David Shmoys. *ACM Conference on Economics and Computation* (*EC '22*).

15. "Trucks Don't Mean Trump: Diagnosing Human Error in Image Analysis." J.D. Zamfirescu-Pereira, Jerry Chen, Emily Wen, Allison Koenecke, **NG**, and Emma Pierson. *ACM Conference on Fairness, Accountability, and Transparency* (*FAccT '22*)

14. "Fair Ranking: a Critical Review, Challenges, and Future Directions." Gourab K Patro, Lorenzo Porcaro, Laura Mitchell, Qiuyue Zhang, Meike Zehlike, and **NG**. *ACM Conference on Fairness, Accountability, and Transparency* (*FAccT '22*)

13. "Strategic Ranking." Lydia Liu, **NG**, and Christian Borgs. *International Conference on Artificial Intelligence and Statistics* (*AISTATS '22*)

12. "Test-optional Policies: Overcoming Strategic Behavior and Informational Gaps." Zhi Liu and **NG**. *ACM Conference on Equity and Access in Algorithms, Mechanisms, and Optimization* (*EAAMO '21*)

11. "The Stereotyping Problem in Collaboratively Filtered Recommender Systems." Wenshuo Guo, Karl Krauth, Michael I. Jordan, and **NG**. *ACM Conference on Equity and Access in Algorithms, Mechanisms, and Optimization* (*EAAMO '21*)

10. "Standardized Tests and Affirmative Action: The Role of Bias and Variance." (2021) **NG**, Hannah Li, and Faidra Monachou. *ACM Conference on Fairness, Accountability, and Transparency* (*FAccT '21*). Also accepted to the *ACM Conference on Equity and Access in Algorithms, Mechanisms, and Optimization* (*EAAMO '21*).

    ACM EAAMO Student Paper Award, 2021

    INFORMS DEI Best Student Paper Award, 2022

9. "Driver Surge Pricing" (2020). **NG** and Hamid Nazerzadeh. *ACM Conference on Economics and Computation* (*EC '20*).

8. "Designing Informative Rating Systems: Evidence from an Online Labor Market" (2020). **NG** and Ramesh Johari. *ACM Conference on Economics and Computation* (*EC '20*).

7. "Fair Allocation through Selective Information Acquisition" (2020). William Cai, Johann Gaebler, **NG**, and Sharad Goel. *AAAI/ACM Conference on Artificial Intelligence, Ethics, and Society* (*AIES '20*).

6. "Who is in Your Top Three? Optimal Learning in Elections with Many Candidates" (2019). **NG**, Lodewijk Gelauff, Sukolsak Sakshuwong, and Ashish Goel. *AAAI Conference on Human Computation and Crowdsourcing* (*HCOMP '19*).

5. "Analyzing Polarization in Social Media: Method and Application to Tweets on 21 Mass Shootings" (2019). Dora Demszky, **NG**, Rob Voigt, James Zou, Jesse Shapiro, Matthew Gentzkow, and Dan Jurafsky. *North American Chapter of the Association for Computational Linguistics* (*NAACL '19*).

    Media: *Washington Post*, *Stanford News*

4. "Designing Optimal Binary Rating Systems" (2019). **NG** and Ramesh Johari. *International Conference on Artificial Intelligence and Statistics* (*AISTATS '19*).

3. "Markets for Public Decision-making" (2018). **NG**, Ashish Goel, and Ben Plaut. *Web and Internet Economics* (*WINE '18*).

2. "Collaborative Optimization for Collective Decision-making in Continuous Spaces" (2017). **NG**, Vijay Kamble, Ashish Goel, David Marn, and Kamesh Munagala. *International Conference on World Wide Web* (*WWW '17*).

1. "Impact of Dual Slope Path Loss on User Association in HetNets" (2015). **NG**, Sarabjot Singh, and Jeffrey Andrews. *IEEE Globecom Workshops* (*GC Wkshps '15*).

Theses

2. "Designing Marketplaces and Civic Engagement Platforms: Learning, Incentives, and Pricing" (2020). **NG**. *PhD Dissertation*, Stanford University.

   INFORMS George Dantzig Dissertation Award, 2020

   ACM SIGecom Dissertation Award (Honorable Mention), 2021

1. "Downlink and Uplink User Association in Dense Next-Generation Wireless Networks" (2015). **NG**. *Bachelors Thesis*, University of Texas at Austin, Austin, TX.

INVITED TALKS & SELECTED PRESENTATIONS

Efficiency and Equity in Resident Crowdsourcing
— Cornell SCAN, NYC Open Data   Spring 2023
— UIUC C3.ai, Harvard CRCS, INFORMS, Columbia DRO/IEOR, NYU   Fall 2022
— Google, INFORMS AI/OR workshop   Summer 2022
— U. Pittsburgh, IIM Ahmedabad, C3.ai, U. Maryland Social Impact Analytics Workshop   Spring 2022
   NYC Open Data Week, Columbia DSI, NBER Decentralization Conference, TOC4Fairness

Combatting Gerrymandering with Social Choice: the Design of Multi-member Districts
— Public Choice Society, JMM - Institute for Mathematics and Democracy   2022 & 2023
— Duke, ETH Zurich, USC, INFORMS   2021

Dropping Standardized Testing for Admissions: Differential Variance and Access
— NYU, Yale, Sharif   2021

Political Data Science and Operations for the 2020 Elections
— Springboard Rise, Cornell Tech   Fall 2020

Driver Surge Pricing
— EC   July 2020
— Berkeley Haas, NYU Stern, UCLA Anderson, USC Marshall, Cornell Tech, Cornell ORIE   Spring 2020
— UT Austin McCombs, Minnesota ISyE, MIT Sloan, Georgetown McDonough, Virginia Darden   Fall 2019
   Cornell ORIE Young Researchers Workshop, INFORMS Annual Meeting
— Market Design workshop at EC, Revenue Management and Pricing Conference   June 2019

Designing Informative Rating Systems: Evidence from an Online Labor Market
— EC   July 2020
— INFORMS Annual Meeting 2019   October 2019
— Uber research seminar   July 2018
— Market Design workshop at EC   June 2018
— Stanford SOAL seminar   April 2018
— INFORMS Annual Meeting 2017   October 2017
— Marketplace Innovation Workshop   June 2017

Word Embeddings Quantify 100 Years of Gender and Ethnic Stereotypes
— USF Data Institute   June 2019
— Stanford Symbolic Systems Symposium   January 2019

Who is in Your Top Three? Optimal Learning in Elections with Many Candidates
— AAAI Conference on Human Computation and Crowdsourcing   October 2019

Markets for Public Decision-making
— INFORMS Annual Meeting 2018   November 2018

Collaborative Optimization for Collective Decision-making in Continuous Spaces
— International Conference on World Wide Web   April 2017

PROFESSIONAL & ACADEMIC ACTIVITIES

Reviewing

Organizer Open Data Week 2023 event on Academia and Government Collaboration; 2023 NSF TRIPODS+X ML and UrbanTech Workshop; EC21 Operations of People-Centric Systems Workshop

Area Chair EAAMO22, EAAMO21

PC Member/Reviewer AAAI23, EC23, FAccT23, WSDM23, FAccT22, FAccTRec22, EC22, WWW21, WINE21, EC21, MD4SG20 Workshop, NeurIPS20 CDMDE Workshop, Global Challenges in EC20, WWW18 Big Web Track, European Symposium on Algorithms, AAAI Human Computing, ICWSM

Reviewer (journals) Nature Machine Intelligence, Nature Human Behavior, Management Science, Operations Research, M&SOM, POMS, Political Science Research and Methods, Autonomous Agents and Multi-Agent Systems, INFORMS Journal on Optimization, Information Systems, Behavior Research Methods, M&SOM student paper competition

Service and Outreach

- PhD Life Committee, Cornell Tech, 2022-Present
- Break Through Tech AI program faculty lead, Cornell Tech, 2022
- DEI Strategic Planning Committee, Cornell Tech, 2021-Present
- Co-lead for working groups, Mechanism Design for Social Good (MD4SG), 2020-Present
- SWAG to College (Houston non-profit) Computer Science Career Guide, 2018
- Organizer, Stanford Society & Algorithms (SOAL) Seminar, 2017-2018
- Organizer, Stanford Research on Algorithms, Incentives, and Networks (RAIN) Seminar, 2016-2017
- Stanford EE Admit Visit Day Committee, 2017
- Instructor & Volunteer, Stanford Splash!, 2016
- UT Austin HKN Honor Society Student Chapter, 2013-2015
- UT Austin IEEE Computer Society Student Chapter, 2011-2013

Other Academic Positions

- Wireless Networks and Communications Group (under Jeffrey Andrews), UT Austin, 2014-2015
- Mobile and Pervasive Computing Group (under Christine Julien), UT Austin, 2012-2013
- Autonomous Vehicles Lab Freshman Research Initiative, UT Austin, 2012