

NIKHIL NAIK

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CURRENT APPOINTMENT

Lead Research Scientist, Salesforce Research 11/2018–Present
I lead a team of researchers working on computer vision, natural language processing, and their applications in biomedical AI.

EDUCATION

MS/PhD, Massachusetts Institute of Technology, Media Lab 11/2016
Advisors: Ramesh Raskar, Alex Pentland, Kavita Bala, César A. Hidalgo

BTech, College of Engineering Pune 06/2010
Major: Electronics and Telecommunication

PAST EMPLOYMENT

Prize Postdoctoral Fellow, Harvard University and MIT 10/2016–09/2018
As a principal investigator and scientist, I conducted research in machine learning and computer vision, raised \$360,000 in funding, and co-supervised four students.

Visiting Research Scientist, Google, Mountain View CA 06/2016–09/2016
Mentor: Sacha Arnoud, Head of Perception, Self Driving Cars (Waymo)
Developed deep learning algorithms to extract built infrastructure indicators from billions of geospatial images

PhD Intern, Microsoft Research, Redmond WA 06/2014–08/2014
Mentor: Sing Bing Kang, Principal Researcher, Cognition Group
Developed a computer vision algorithm to improve 3D imaging for the Microsoft Kinect sensor

PhD Intern, Think Tank Team, Samsung Research, Mountain View CA 06/2012–08/2012
Mentor: Pranav Mistry, Global Senior Vice President, Samsung Electronics
Developed the optical design and computer vision algorithms for a novel 3D sensing technology

HONORS AND AWARDS

Webby Award for the Best Use of Machine Learning on the Internet (for [Streetchange](#)) 2018

Best Research Article of the Year, Economic Inquiry 2018

Prize Postdoctoral Fellowship, Harvard University 2016

Outstanding Reviewer Award, IEEE Conference on Computer Vision & Pattern Recognition 2016

Doctoral Consortium Award, International Conference on Computer Vision 2015

S.V. Chandrasekhar Aiya Memorial Prize for Best Undergraduate Project 2009

First Prize in Annual IEEE All India Project Competition 2009

Dhirubhai Ambani Undergraduate Scholarship (4 years) 2006

National Talent Search Scholarship, Government of India (6 years) 2004

SELECTED PUBLICATIONS AND PREPRINTS

CASTing Your Model: Learning to Localize Improves Self-Supervised Representations
Ramprasaath R Selvaraju, Karan Desai, Justin Johnson, Nikhil Naik
IEEE Conference on Computer Vision & Pattern Recognition (CVPR), (2021)

Improving Out-of-distribution Generalization via Multi-task Self-supervised Pretraining

Isabela Albuquerque, Nikhil Naik, Junnan Li, Nitish Keskar, Richard Socher
arXiv preprint arXiv:2003.13525, (2020)

Deep Learning-enabled Breast Cancer Hormonal Receptor Status Determination from Base-level H&E Stains

Nikhil Naik, Ali Madani, Andre Esteva, Nitish Shirish Keskar, Michael F Press, Daniel Ruderman, David B Agus, Richard Socher
Nature Communications, (2020)

Progen: Language Modeling for Protein Generation

Ali Madani, Bryan McCann, Nikhil Naik, Nitish Shirish Keskar, Namrata Anand, Raphael R Eguchi, Po-Ssu Huang, Richard Socher
Neural Information Processing Systems (NeurIPS) Workshops, (2020)

DIME: An Information-Theoretic Difficulty Measure for AI Datasets

Peiliang Zhang, Huan Wang, Nikhil Naik, Caiming Xiong, Richard Socher
Neural Information Processing Systems (NeurIPS) Workshops, (2019)

Maximum Entropy Fine-Grained Classification

Abhimanyu Dubey, Otkrist Gupta, Ramesh Raskar, Nikhil Naik
Neural Information Processing Systems (NeurIPS), (2018)

Improving Fine-Grained Visual Classification using Pairwise Confusion

Abhimanyu Dubey, Otkrist Gupta, Pei Guo, Ramesh Raskar, Ryan Farrell, Nikhil Naik
European Conference on Computer Vision (ECCV), (2018)

Accelerating Neural Architecture Search using Performance Prediction

Bowen Baker*, Otkrist Gupta*, Ramesh Raskar, Nikhil Naik
International Conference on Learning Representations (ICLR) Workshops, (2018)

Designing Neural Network Architectures using Reinforcement Learning

Bowen Baker, Otkrist Gupta, Nikhil Naik, Ramesh Raskar
International Conference on Learning Representations (ICLR), (2017)

Computer Vision Uncovers Predictors of Physical Urban Change

Nikhil Naik, Scott Duke Kominers, Ramesh Raskar, Edward L Glaeser, Csar A Hidalgo
Proceedings of the National Academy of Sciences (PNAS), (2017)

Big Data and Big Cities: The Promises and Limitations of Improved Measures of Urban Life

Edward L. Glaeser, Scott Duke Kominers, Michael Luca, Nikhil Naik (*in alphabetical order*)
Economic Inquiry, (2017). (Winner of the Best Article of the Year Award)

Deep Learning the City: Quantifying Urban Perception at a Global Scale

Abhimanyu Dubey, Nikhil Naik, Devi Parikh, Ramesh Raskar, César A. Hidalgo
European Conference on Computer Vision (ECCV), (2016)

Are Safer Looking Neighborhoods More Lively? A Multimodal Investigation into Urban Life

Marco De Nadai, Radu Vieriu, Gloria Zen, Stefan Dragicevic, Nikhil Naik, Michele Caraviello, César A Hidalgo, Nicu Sebe, Bruno Lepri
ACM Multimedia Conference, (2016)

A Light Transport Model for Mitigating Multipath Interference in Time-of-flight Sensors

Nikhil Naik, Achuta Kadambi, Christoph Rhemann, Shahram Izadi, Ramesh Raskar, Sing Bing Kang
IEEE Conference on Computer Vision & Pattern Recognition (CVPR), (2015)

Coreset-Based Adaptive Tracking

Abhimanyu Dubey, Nikhil Naik, Dan Raviv, Rahul Sukthankar, Ramesh Raskar
arXiv preprint arXiv:1511.06147, (2015)

Streetscore—Predicting the Perceived Safety of One Million Streetscapes

Nikhil Naik, Jade Philipoom, Ramesh Raskar, César A Hidalgo
IEEE Conference on Computer Vision & Pattern Recognition (CVPR) Workshops, (2014)

Pose Estimation using Time-resolved Inversion of Diffuse Light

Dan Raviv, Christopher Barsi, Nikhil Naik, Micha Feigin, Ramesh Raskar
Optics Express, (2014)

Estimating Wide-angle, Spatially Varying Reflectance using Time-resolved Inversion of Backscattered Light

Nikhil Naik, Christopher Barsi, Andreas Velten, Ramesh Raskar
Journal of Optical Society of America A, (2014)

Frequency Analysis of Transient Light Transport with Applications in Bare Sensor Imaging

Di Wu, Gordon Wetzstein, Christopher Barsi, Thomas Willwacher, Matthew OToole, Nikhil Naik, Qionghai Dai, Kyros Kutulakos, Ramesh Raskar
European Conference on Computer Vision (ECCV), (2012)

Single View Reflectance Capture using Multiplexed Scattering and Time-of-flight Imaging

Nikhil Naik, Shuang Zhao, Andreas Velten, Ramesh Raskar, Kavita Bala
ACM Transactions on Graphics/SIGGRAPH Asia, (2011)

PRESENTATIONS AND INVITED TALKS

2019-20: Duke University; University of California Los Angeles; MIT Media Lab; NABE Tech Economics Conference, Seattle; Deep Learning Indaba, Nairobi

2018-19: Machine Learning Colloquium, Microsoft Research New England; Facebook AML Research; Intel Intelligent Systems Lab; AWS AI Research; MIT-IBM Watson AI Lab; TTI/Vanguard Conference, Washington DC; Conference on Big Data, Harvard Center for Mathematical Sciences & Applications

2017-18: University of California, Berkeley; Yale University; Boston University; Harvard Business School, Technology and Operations Unit; NIPS Workshop on Meta-Learning; NIPS Workshop on Learning with Limited Labeled Data; Imperial College London, Data Science Institute; Conference on Digital Experimentation, MIT

2016-17: New England Machine Learning Day, Microsoft Research; Zillow Inc; Summer Institute, National Bureau of Economics Research; Vision Seminar, MIT CSAIL; Conference on Economics Experiments in the Tech Industry, Stanford; Statistics Colloquium, Harvard University; Digital Economics Conference, Microsoft Research New York; Center for Research on Computation and Society, Harvard Computer Science

2015-16: Machine Perception Seminar, Google Research; Summer Institute, National Bureau of Economics Research; Image and Video Computing Seminar, Boston University; Frontiers of Digital Data and Experimentation Conference, Harvard Business School; Federal Reserve Bank of Boston; American Economics Association Meeting, San Francisco; The World Bank, Innovation Labs; TEDxBaconStreet; Conference on Digital Experimentation, MIT

2014-15 & before: City of Boston Mayor's Office; TripAdvisor Inc; Boston Properties Group; Bay Area Vision Meeting, Stanford Computer Science; MIT City Science Workshop; Visual Computing Seminar, Microsoft Research Redmond; IEEE CVPR Workshop on Web-scale Vision and Social Media

SELECTED MEDIA COVERAGE

Computer Vision Uncovers Predictors of Physical Urban Change: [Atlantic CityLab](#), [Fast Company](#), [Forbes](#), [Harvard Gazette](#), [HBS Working Knowledge/Quartz](#), [MIT News](#), [New York Times](#), [Yahoo! News](#)

Big Data and Big Cities: The Promises and Limitations of Improved Measures of Urban Life: [The Atlantic](#), [Chicago Policy Review](#), [Forbes/HBS Working Knowledge](#)

Designing Neural Network Architectures using Reinforcement Learning: [MIT Technology Review](#)

Streetscore—Predicting the Perceived Safety of One Million Streetscapes: [Atlantic CityLab](#), [Daily Mail](#), [The Economist](#), [Fast Company](#), [Gizmodo](#), [New Scientist](#)

RESEARCH GRANTS

Stanford AI Lab Human-centric AI Research Grant (co-investigator) (\$50,000)	2018
NSF Methodology, Measurement, and Statistics Grant (co-investigator) (\$160,000)	2018
Sloan Foundation Conference Grant (co-investigator) (\$20,000)	2017
Harvard Star Family Award for Promising Scientific Research (co-investigator) (\$120,000)	2016
International Growth Centre Small Projects Grant (co-investigator) (\$10,000)	2015

GRADUATE STUDENT ADVISING

Name	Program	Institution	Year	Initial Placement
Isabela Albuquerque	Salesforce Intern	U. Montreal	2020	—
Ankan Bansal	Salesforce Intern	U. Maryland	2019	—
Karan Dwivedi	Post-bacc	Harvard	2017	Startup
Otkrist Gupta	PhD	MIT	2016–2018	Startup
Bowen Baker	MEng	MIT	2016–2017	OpenAI
Abhimanyu Dubey	Post-bacc	Harvard	2015–2017	MIT (PhD)

PROGRAMMING SKILLS

Programming Languages: Python, C/C++
Libraries: PyTorch, TensorFlow

SELECTED ACADEMIC AND PROFESSIONAL SERVICE

Co-organizer: *ICLR 2020 Workshop on Neural Architecture Search (with Frank Hutter, Aaron Klein, Arbor Zela, Liam Li, and others); CVPR 2019 Tutorial on Meta Learning for Computer Vision (with Chelsea Finn, Frank Hutter, Nitish Keskar, Richard Socher, and others); CVPR 2018 DeepGlobe Workshop on Satellite Image Understanding (with Ramesh Raskar, Manohar Paluri, Lorenzo Torresani, and others); Harvard Center for Mathematical Sciences and Applications' Conference on Big Data 2018 (with Shing-Tung Yau, Scott Kominers, and others)*

Program Committee/Reviewer: *CVPR, ECCV, ICCV, NeurIPS, ICLR, ICML, PNAS*