

# Nikhil Garg

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## EDUCATION

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**Stanford University, August 2015 - Present**

**Stanford, CA**

*MS/PhD Student, Electrical Engineering*

**University of Texas at Austin, May 2015**

**Austin, TX**

*BS, Electrical and Computer Engineering, Highest and Special Honors  
BA, Plan II Honors*

*Thesis: User Association in Dense Next-Generation Wireless Networks (Advisor: Prof. Andrews)*

*Senior Project: ProjectAlexandria.net: Book Recommendation and Exploration Engine (Advisor: Prof. Caramanis)*

## SELECTED AWARDS

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NSF Graduate Research Fellowship

Wayne Abramson Unrestricted Endowed Presidential Scholarship, UT Austin

Distinguished College Scholar, Engineering and Liberal Arts, UT Austin

Next Generation Scholar, Robert S. Strauss Center for International Security and Law

## INDUSTRY EXPERIENCE

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**Microsoft**

**Bellevue, WA**

*Software Development Engineering Intern, Bing Ads*

*May 2014 - August 2014*

- Developed performance measurement for a big data stream processing system in C#

**NASA Glenn Research Center**

**Cleveland, OH**

*Research Associate, NASA Space Academy*

*June 2013 - August 2013*

- Led the development of a real-time, multi-modal signal processing system for pilot state monitoring
- Performed EEG signal processing in Python and MATLAB
- Designed, built, and launched a submarine sensor package

## RESEARCH EXPERIENCE

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**Modeling of Reputation Systems on Online Platforms**

**Stanford**

*PhD Research Assistant under Prof. Ramesh Johari*

*June 2016 - Present*

- Modeling and simulating a comparison based reputation system for online platforms
- Working with freelancing platform Upwork to improve worker quality prediction

**Collaborative Optimization**

**Stanford**

*PhD Research Assistant under Prof. Ashish Goel*

*January 2016 - Present*

- Adapting optimization algorithms into simple, incentive compatible mechanisms
- Led development of experiment platform (using Meteor and JavaScript) for Mechanical Turk

**Wireless Networks and Communications Group**

**UT Austin**

*Research Assistant under Prof. Jeffrey Andrews*

*August 2014 - May 2015*

- Built a network simulator to analyze effects of dual-slope path loss models on user association under a stochastic geometric model of wireless networks

**Mobile and Pervasive Computing Group**

**UT Austin**

*Research Assistant under Prof. Christine Julien*

*January 2012 - May 2013*

- Developed an application with mobile robots to test context sharing framework
- Analyzed data aggregation techniques in mobile, ad-hoc, multi-hop networks

**Autonomous Vehicles FRI Lab, Learning Agents Research Group**

**UT Austin**

*Student - Freshmen Research Initiative*

*January 2012 - May 2012*

- Worked on a Simultaneous Location and Mapping method for the vehicle
- Learned AI, image processing, and other techniques and gained experience using ROS

## POLICY EXPERIENCE

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### IEEE-USA Insight Magazine

Monthly Column Writer

August 2015 - December 2015

### IEEE-USA, Washington Internship for Students of Engineering Program

Technology Policy Associate

Washington, DC

June 2015 - August 2015

- Analyzed policy implications of LTE-unlicensed and long-term unlicensed spectrum policy
- Submitted a FCC filing
- Met leaders from the FCC, White House OSTP, Congress, and other policy makers

### Texas Senate

Legislative Intern, State Senator Davis's Legislative Office

Austin, TX

August 2013 - December 2013

### Strauss Center for International Security and Law

Scholar, Next Generation Scholars Program

UT Austin

August 2013 - May 2014

## TEACHING EXPERIENCE

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### Department of Electrical & Computer Engineering

Teaching Assistant for EE 306 (Intro to Computing) under Prof. Yale Patt

UT Austin

August 2013 - December 2013

### Department of Mathematics

Learning Assistant for Integral Calculus

UT Austin

January 2012 - May 2012

## PROFESSIONAL & RESEARCH ACTIVITIES

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### Talks

- *Designing Reputation Systems for Online Platforms: Pairwise Comparisons*, Marketplace Innovation Workshop, 2017
- *Reputation, Trust, and Markets*, Stanford MS&E 190, 2017
- *Pairwise Comparisons for Online Reputation Systems (Poster)*, Stanford Computer Forum, 2017
- *Collaborative Optimization for Collective Decision Making in Continuous Spaces*, WWW, 2017
- *Impact of Dual Slope Path Loss on User Association in HetNets*, Globecom Workshop on HetNets, 2015

### Reviewing

- Markets for Good's Good Data Grant, 2016

### Organization

- Stanford Research on Algorithms, Incentives, and Networks (RAIN) Seminar, 2016-2017
- Stanford EE Admit Visit Day Committee, 2017
- UT Austin HKN Honor Society Student Chapter, 2013-2014
- UT Austin IEEE Computer Society Student Chapter, 2011-2013

## PUBLICATIONS

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### Conference

3. **Garg, N.**, Kamble, V., Goel, A., Marn, D., & Munagala, K. (2017). "Collaborative Optimization for Collective Decision-making in Continuous Spaces. In Proceedings of the 26th International Conference on World Wide Web.

2. **Garg, N.**, Singh, S., & Andrews, J. (2015). "Impact of Dual Slope Path Loss on User Association in HetNets." In 2015 IEEE Globecom Workshops (GC Wkshps) (pp. 1–6).
1. Lewandowski, B., Fortier, K., **Garg, N.**, Rielly, V., Mackey, J., Hearn, T., ... Fenton, B. "Use of electroencephalography and galvanic skin response in the prediction of an attentive cognitive state," presented at the Health and Human Performance Research Summit, Dayton, CO, 2015.

**Non-refereed**

4. **Garg, N.** (2015). "Fair Use and Innovation in Unlicensed Wireless Spectrum: LTE unlicensed and Wi-Fi in the 5 GHz unlicensed band," IEEE-USA, Journal of Technology and Public Policy.
3. **Garg, N.** "Comments of Nikhil Garg: A Doctrine of Fair Use of Unlicensed Bands." Federal Communications Commission ET Docket No. 15-105 (LTE Unlicensed Docket), 26 Jun. 2015.
2. **Garg, N.** (2015). "Downlink and Uplink User Association in Dense Next-Generation Wireless Networks," Bachelors Thesis, University of Texas at Austin, Austin, TX.
1. Fortier, K., **Garg, N.**, and & Pickering, E. (2013). "Multi-Modal, Multi-State, Real-Time Crew State Monitoring System," NASA Glenn Research Center, Space Academy Research Report.

**Media**

2. "Students' Voice: On Reading the History of Your Field," IEEE-USA Insight, 1 Oct. 2015.
1. "Students' Voice: On WISE Internships," IEEE-USA Insight, 9 Sept. 2015.

**RELEVANT COURSEWORK** 

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**Graduate Courses (Stanford)**

Advanced Algorithms for Machine Learning, Reinforcement Learning, Deep Learning for NLP, Statistical Learning Theory, Approximation Algorithms, Convex Optimization, Statistical Signal Processing, Linear Dynamical Systems, Wireless Communications, Law Order & Algorithms

**Graduate Courses (UT Austin)**

Probability & Stochastic Processes, Wireless Communications, Information Theory, Digital Communications

**Undergraduate Courses (UT Austin)**

Real Analysis, Algorithms, Digital Signal Processing, Real-time DSP Lab, Digital Image and Video Processing, Embedded and Real-Time Operating Systems Lab, Computer Architecture, Digital Logic Design, Foreign Policy, Philosophy, Economics

**TECHNICAL SKILLS** 

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**General** Machine Learning, Deep Learning, Software, Optimization, Mechanism Design, Signal Processing, Communications, Robotics, Web development

**High-Level Languages** Python, Julia, MATLAB, C, C++, Java, JavaScript

**LANGUAGES** 

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**English** Native

**Hindi** Fluent

**Spanish** Read/Understand