# Rad Niazadeh


CONTACT INFORMATION

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RESEARCH INTERESTS

- Algorithmic game theory, mechanisms design, and economic aspects of algorithms.
- Online algorithm design, online learning and their applications.
- Combinatorial optimization, approximation algorithms, and stochastic optimization.

EDUCATION

**Cornell University, Department of Computer Science**, Ithaca, New York.

- PhD., Theoretical computer science, Sept 2012 – Current
  PhD. committee: Prof. Robert Kleinberg (Advisor), Prof. Jon Kleinberg, Prof. Emin Gün Sirer.
  - Current GPA: **4.14/4**.

**Sharif University of Technology**, Tehran, Iran

- M.Sc., Electrical Engineering, Signal processing and machine learning Sept 2008 – Sept 2010
  - Total GPA with thesis: **19.37/20**.
- B.Sc., Electrical Engineering, Communications Sept 2004 – Sept 2008
  - Total GPA: **18.61/20.**

PUBLICATIONS

**Working Papers:**

- "A Faster Algorithm for Bidder-Optimal Core Points",
  with Jason Hartline, Nicole Immorlica and Brendan Lucier [pdf].
- "Mechanism Design for Value Maximizers",
  with Chris Wilkens and Ruggiero Cavallo [pdf].

**Conference Papers:**

1. "Bernoulli Factories and Black-Box Reductions in Mechanism Design",
   with Shaddin Dughmi, Jason Hartline and Robert Kleinberg, to appear in **STOC '17** [pdf].
2. "Online Auctions and Multi-scale Online Learning",
   with Nikhil Devanur and Zhiyi Huang, to appear in **EC '17** [pdf].
3. "Truth and Regret in Online Scheduling",
   with Nikhil Devanur, Shuchi Chawla, and Janardhan Kulkarni, to appear in **EC '17** [pdf].
4. "GSP - The Cinderella of Mechanism Design",
   with Chris Wilkens and Ruggiero Cavallo, to appear in **WWW '17** [pdf].
5. "Competitive Equilibria for Non-quasilinear Bidders in Combinatorial Auctions,
   with Chris Wilkens, in proceedings of **WINE '16** [pdf].
6. "Optimal Auctions vs Anonymous Pricing",
   with Saeed Alaei, Jason Hartline, Manolis Pountourakis and Yang Yuan, in proceedings of **FOCS '15**
   (also presented at **GAMES '16**) [pdf].
7. "Secretary Problems with Non-Uniform Arrival Order",
   with Thomas Kesselheim and Robert Kleinberg, in proceedings of **STOC '15**
   (also presented at **HALG '16**) [pdf].
8. "Simple and Near-Optimal Mechanisms For Market Intermediation ",
   with Yang Yuan and Robert Kleinberg, in proceedings of **WINE '14** [pdf].
9. "A Unified Approach to Online Allocation Algorithms via Randomized Dual Fitting",
   with Robert Kleinberg, Technical Report (course material for CS 6820 at Cornell) [pdf].

10. "An Alternating Minimization Algorithm for Sparse Channel Estimation", with M. Babaie-Zadeh and C. Jutten, in proceedings of **LVA-ICA(ICA) '10**, France [pdf].

11. "Adaptive and Non-Adaptive ISI Sparse Channel Estimation Based on SL0", with M. Babaie-Zadeh, S. Hamidi and C. Jutten, , in proceedings of **LVA-ICA(ICA) '10**, France [pdf].

12. "Implementation and Optimization of Wavelet Modulation in Additive Gaussian Channels", with S. Nassirpour and M.B. Shamsollahi, in proceedings of IEEE's **ICACT '09**, South Korea [pdf].

**Journal Papers:**

1. "Optimal Auctions vs Anonymous Pricing", Saeed Alaei, Jason Hartline, Rad Niazadeh, Manolis Pountourakis, and Yang Yuan, invited in **Elsevier Journal of Games and Economic Behavior (GEB)**.

2. "On The Achievability of Cramér-Rao Bound in Noisy Compressed Sensing", Rad Niazadeh, M. Babaie-Zadeh and C. Jutten, **IEEE Transactions on Signal Processing**, Volume 60, Issue 1 [pdf].

3. "ISI sparse channel estimation using SL0 and its application in ML sequence-by-sequence equalization", Rad Niazadeh, M. Babaie-Zadeh, S. Hamidi Ghalehjegh and C. Jutten, **Elsevier Journal of Signal Processing**, Volume 92, Issue 8 [pdf].

4. "Sparse Channel Estimation by Factor Graphs", R. Niazadeh, M. Babaie-Zadeh and C. Jutten, submitted to **Elsevier Journal of Signal Processing** [pdf].

## Honors & Awards

- Received **2016 Google PhD. Fellowship** in market algorithms, Google Inc., 2016.
- Received **Jacobs scholar fellowship**, Cornell University, Fall 2012.
- **Ranked 1st** out of 120+ M.Sc. students in EE class of 2010, Sharif University of Technology.
- **Ranked 3rd** out of 140+ B.Sc. students in EE class of 2008, Sharif University of Technology.
- **Ranked 15th** out of 400000+ participants in the Nationwide Universities Entrance Exam in Iran (Konkoor) – Summer 2004.
- Received the **Exceptional Talents Award and M.Sc. Admission** as the top student (**Ranked 1st** out of 20 selected students for this award), Sharif University of Technology. – Spring 2008.
- Received **Financial Research Assistance** from Iran Telecommunication Research Center (ITRC) – Fall 2009.
- Received **4-year and 2-year National Elite Foundation fellowships** during B.Sc. and M.Sc. – Fall 2004 and Fall 2008.
- Received the **President's Honorary Rank Award** presented by Prof. S. Sohrabpour, President of Sharif University of Technology – Fall 2004.

## Research Experience

**Microsoft Research Redmond (Seattle), Research Internship, Summer 2016.**

- **Supervisors: Nikhil Devanur.**
- **Research on learning theory and auctions:** Online sample complexity of auctions and learning, Online learning and scheduling of jobs in the cloud.

**Northwestern University (Evanston) , Visiting, Spring 2016.**

- **Supervisor: Jason Hartline.**
- **Research on mechanism design:** Applications of Bernoulli factory and its combinatorial generalizations for Bayesian incentive compatible black-box reductions in mechanisms design.

**Yahoo! Research Labs (Sunnyvale), Research Internship, Fall 2015.**

- **Supervisor: Christopher Wilkens.**

➢ **Research on auction theory and mechanism design:** Diversification in sponsored search auctions, Characterization of Walrasian equilibrium and incentive compatible auctions in multi-item markets with non-quasilinear utilities.

**Microsoft Research New England (Cambridge), Research Internship, Summer 2015.**

➢ **Supervisors: Nicole Immorlica and Brendan Lucier,**

➢ **Research on algorithmic mechanism design and online algorithms:** Algorithmic aspects of core-selecting package auctions, Online matching in general graphs.

**Microsoft Research New England (Cambridge), Visiting, Fall 2014 and Spring 2015.**

➢ **Supervisor: Robert Kleinberg.**

➢ **Research on online algorithms and mechanism design:** Secretary problems and optimal stopping theory with limited randomness.

**Cornell University, Fall 2012- Present.**

➢ **Research assistant, Advisor: Robert Kleinberg.**

➢ **Algorithmic game theory and mechanism design research:** Revenue approximation of anonymous posted pricing in single item auctions for non-identical bidders, Approximate fee-setting affine mechanisms for market intermediation, Envy-free benchmark for non-ordinal environments, Unified randomized dual-fitting analysis for online allocation problems and online matching.

## Teaching Experience

**Teaching Assistants**

➢ Algorithmic Game Theory (CS 6840)– Prof. Eva Tardos, Spring 2014.

➢ Networks (CS 2085) – Prof. Jon Kleinberg and Prof. Eva Tardos, Fall 2012.

➢ Data Networks (Prof. M. R. Pakravan), Communication Systems II (Prof Prof. J. A. Salehi and Prof. F. Behnia), Signals and Systems (Prof. M. Babaie-Zadeh), Electronics (Prof. S. Sadughi and Prof. M. H. Alavi), Linear Control Systems (Prof. M. Karimi G), Machine Languages (Prof. E. Sanaei), Electronic Circuits (Prof. M. B. Shamsollahi), Electromagnetics (Prof. F. Massoumian).

➢ Course Instructor and lab Supervisor, DSP Lab, Sharif University of Technology, 2007-2010.

## Selected Courses & Presentations

**Selected Graduate Courses**

➢ **Cornell University** Advanced Analysis of Algorithms (Robert Kleinberg), Complexity Theory (David Stuerer), Algorithmic Game Theory (Eva Tardos), Approximation Algorithms (David Williamson), Spectral Graph Theory (David Williamson), Analysis of Networks (Jon Kleinberg), Reasoning about Uncertainty (Joe Halpern), Applied Stochastic Processes (Sidney Resnick), Sparsifiers and Expanders (Robert Kleinberg, Audit), Algebraic Geometry (Karola Meszaros).

➢ **Sharif University of Technology** Stochastic Processes, Coding Theory, Information Theory, Adaptive Filter, Blind Source Separation, Advanced Communications, Communications Seminar, Data Networks, Queuing Theory (Audited).

**Selected Presentations**

➢ **Mechanism Design for Complex Environments,**
SUNY Buffalo (UB), Colloquium talk. March 2017

➢ **Bernoulli Factories and Black-box Reductions in Mechanisms Design,**
Cornell University, Theory Seminar. Feb 2017

➢ **Robustness and Approximation Theory in Online Algorithm Design,**
INFORMS International 2016 (invited talk). June 2016

➢ **Bernoulli Factories and Truthful Mechanism Design,**
A-exam Talk at Cornell University. May 2016

➢ **Secretary Problems with Non-Uniform Arrival Order,**
47th Annual ACM Symposium on Theory of Computing (STOC 2015). June 2015.

➢ **Robustness of Online Algorithms,**
Google Research Labs, Mountain-view. Nov 2015.

➢ **Posted Pricing vs Optimal Auction in Single Item Environment,**
MSR/Harvard AGT Seminar, Microsoft Research New England. July 2014

## Academic Refereeing

**Conferences:**

➢ ACM Symposium on Theory of Computing (STOC), ACM Symposium on Discrete Algorithms (SODA), ACM conference on Economics and Computation (EC), ACM Symposium on Algorithms and Theory (SAGT), Web and Internet Economics (WINE), International Colloquium on Automata, Languages, and Programming (ICALP), World Wide Web conference (WWW), and European Symposia on Algorithms (ESA).

## Skills

**Computer Skills:**

➢ *Programming Languages:* C/C++, MATLAB & Simulink, Python, HDL based languages like VHDL and Verilog, 8051/80x86/AVR Assembly, TMS320C6xxx linear, TCL.

➢ *Network Programming:* Extensive knowledge of OPNET, NS (Network Simulator) & NS2, Socket Programming (Raw, Layer 3,...).

➢ *Applications:* Extensive knowledge of Cadence and OrCAD PSpice, Modelsim, CodeVisionAVR, Proteus, Code Composer Studio (DSP boards application), CorelDRAW, Microsoft Office and other common productivity packages for Windows and GNU Linux platforms.

➢ *Typesetting:* TEX, LATEX and XELATEX(for Farsi typesetting).

➢ *Operating Systems:* Linux, Microsoft Windows 7/Vista/XP/2000, Mac OS X.

**Language Skills:**

➢ English (*Fluent*), Farsi (*Native*)

## References


➢ Robert Kleinberg (rdk@cs.cornell.edu)

➢ Jason Hartline (hartline@eecs.northwestern.edu)

➢ Nicole Immorlica (nicimm@microsoft.com)

➢ Eva Tardos (eva.tardos@cornell.edu)

➢ Nikhil Devanur (nikdev@microsoft.com)

➢ Brendan Lucier (brlucier@microsoft.com)

➢ Jon Kleinberg (kleinber@cs.cornell.edu)

➢ Christopher Wilkens (cwilkens@yahoo-inc.com)