

# Anqi Fu

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## EDUCATION

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<b>Ph.D in Electrical Engineering, Stanford University</b> <i>Emphasis:</i> Convex Optimization, Radiation Treatment Planning <i>Adviser:</i> Stephen Boyd	<i>In progress</i>
<b>M.S. in Statistics, Stanford University</b>	<i>Dec 2014</i>
<b>M.A. in Business Research, Stanford Graduate School of Business</b> <i>Program:</i> Economic Analysis and Policy	<i>Dec 2012</i>
<b>B.S. in Electrical Engineering, University of Maryland, College Park</b> <i>Emphasis:</i> Digital Signal Processing, Communication Theory, <i>GPA:</i> 4.0/4.0 <i>Thesis:</i> Nanoporous Silicon Waveguides for Biosensing, advised by Thomas E. Murphy	<i>May 2009</i>
<b>B.A. in Economics (Minor in Mathematics), University of Maryland, College Park</b> <i>Emphasis:</i> Game Theory, Auctions, Mechanism Design, <i>GPA:</i> 4.0/4.0 <i>Thesis:</i> Design and Analysis of the AWS Spectrum Auctions, advised by Peter Cramton	<i>May 2009</i>

## PAPERS

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A. Fu, B. Narasimhan, S. Boyd. “CVXR: An R Package for Disciplined Convex Optimization.” *arXiv preprint: arXiv: 1711.07582*. Submitted, November 2017.

A. Fu, B. Ungun, L. Xing, S. Boyd. “A Convex Optimization Approach for Radiation Treatment Planning with Dose Constraints.” *arXiv preprint: arXiv: 1809.00744*. Submitted, March 2018.

O.J. Glembocki, R.W. Rendell, D.A. Alexson, S.M. Prokes, A. Fu, M.A. Mastro. (2009). “Dielectric-Substrate-Induced Surface-Enhanced Raman Scattering.” *Phys. Rev. B*, vol. 80 (8), 085416.

R.D. Shull, V. Provenzano, A.J. Shapiro, A. Fu, M.W. Lufaso, J. Karapetrova, G. Kletetschka, V. Mikula. (2006). “The Effect of Small Metal Additions (Co, Cu, Ga, Mn, Al, Bi, Sn) on the Magnetocaloric Properties of the  $Gd_5Ge_2Si_2$  Alloy.” *Journal of Applied Physics*, vol. 99 (8), 08K908.

J.L. Her, K. Koyama, K. Watanabe, V. Provenzano, A. Fu, A.J. Shapiro, R.D. Shull. (2005). “High-Magnetic Field X-ray Diffraction Studies on  $Gd_5(Ge_{2-x}Fe_x)Si_2$  ( $x = 0.05$  and  $0.2$ ).” *Materials Transactions*, vol. 46 (9), pp. 2011-2014.

## PRESENTATIONS

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<b>useR! Conference</b> , Brisbane Convention & Exhibition Center, Brisbane, QLD	<i>2018</i>
<b>useR! Conference</b> , Stanford University, Stanford, CA	<i>2016</i>
<b>H2O World</b> , Mountain View, CA	<i>2015</i>

## SOFTWARE

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**CVXR**, an R package for modeling convex optimization problems. [cvxr.rbind.io](http://cvxr.rbind.io)

**ConRad**, a Python library for radiation treatment planning. [www.github.com/bungun/conrad](http://www.github.com/bungun/conrad)

**H2O**, a Java-based distributed statistical analysis software. I was the primary developer on generalized low rank models (GLRM) and the R package. [www.github.com/h2oai/h2o-3](http://www.github.com/h2oai/h2o-3)

## RESEARCH EXPERIENCE

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**School of Medicine**, Stanford University, Stanford, CA

*Life Science Research Professional, Xing Lab*

*Jan 2016 – Sep 2016*

- Developed a unified convex optimization approach for radiation oncology treatment planning with dose-volume constraints. Implemented and tested algorithm in Python on clinical data.
- Initiated and led the development effort on CVXR, an R package that provides an object-oriented modeling language for convex optimization problems.

**Economics & Social Systems Group**, Yahoo! Research, Berkeley, CA

*Research Intern*

*July 2011 – Sep 2011*

- Constructed a theoretical model of market competition when firms have access to targeted advertising technology, and analyzed its pure Nash equilibria.

**RioRey Network Security (via MIPS)**, University of Maryland, College Park, MD

*Research Assistant*

*Feb 2008 – Sep 2008*

- Designed, developed and implemented an adaptive algorithm to detect and filter incoming packets from DDoS flood attacks. Simulations with customer data show an accuracy rate of > 80%.

**Photonics Research Laboratory**, University of Maryland, College Park, MD

*MERIT Biosystems Internships for Engineers (BIEN) Student Researcher*

*June 2008 – Aug 2008*

- Designed, built and programmed a scanning laser system. Fabricated single mode porous silicon waveguides for optical sensing of biomolecules and characterized their transmission spectra.
- Composed and presented a technical report, which was awarded best out of entire program pool.

**Magnetic Materials Group**, National Institute of Standards and Technology, MD

*Student Researcher*

*June 2004 – Oct 2004*

- Characterized the magnetocaloric properties of various metal-doped  $Gd_5Ge_2Si_2$  using X-ray diffraction, SEM microscopy and SQUID magnetometry.

## INDUSTRY EXPERIENCE

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**H2O: Math Engine for Big Data**, H2O.ai, Mountain View, CA

*Machine Learning Scientist*

*Sep 2013 – Aug 2014, Jan 2015 – Jan 2016*

*Math Hacker (Data Scientist) Intern*

*June 2013 – Aug 2013*

- Led the design, implementation and testing of GLRM (generalized low rank models) on H2O, a Java-based distributed statistical software engine.
- Initiated and led the development effort on an R package that allows users to run H2O from within R via the REST API. Package was accepted by CRAN in June 2014.

**Power Electronics Branch**, Naval Research Laboratory, MD

*Engineering Technician*

*June 2006 – Mar 2008*

- Collected and analyzed Raman spectra from dielectric core nanowires. Determined optimal Ag deposition time on retroreflector beads coated with SERS-active nanoparticles for greatest signal intensity.

## TEACHING EXPERIENCE

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**Graduate School of Business**, Stanford University, Stanford, CA

*Teaching Assistant for OIT268 (Making Data Relevant)*

*Jan 2012 – Apr 2012*

**ECE Department**, University of Maryland, College Park, MD

*Undergraduate Teaching Fellow for ENEE114 (Programming Concepts for Engineers)*

*Aug 2007 – Aug 2008*

## **HONORS AND AWARDS**

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<b>Stanford Graduate Fellowship</b> , Stanford University	<i>2016</i>
<b>Graduate Research Fellowship</b> , National Science Foundation	<i>2009</i>
<b>Electrical and Computer Engineering Chair's Award</b> , University of Maryland, College Park	<i>2009</i>
<b>Behavioral and Social Sciences Dean's Scholar</b> , University of Maryland, College Park	<i>2009</i>
<b>Senior Dillard Award for Best Economics Thesis</b> , University of Maryland, College Park	<i>2009</i>
<b>Intel Science Talent Search Semifinalist</b>	<i>2005</i>
<b>Maryland Distinguished Scholarship</b>	<i>2005</i>
<b>National Merit Scholarship Finalist</b>	<i>2005</i>
<b>Siemens Westinghouse Science Competition Semifinalist</b>	<i>2004</i>