

# Anqi Fu

## Curriculum Vitae

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### Education

- 2016–2021 **Ph.D. in Electrical Engineering**, *Stanford University*, Stanford, CA.  
(Expected) Dissertation: *Large-Scale Optimization with Applications to Medical Data Science*  
Committee: Stephen P. Boyd (Ph.D. Adviser), Lei Xing, Balasubramanian Narasimhan
- 2012–2014 **M.S. in Statistics**, *Stanford University*, Stanford, CA.
- 2009–2012 **M.A. in Business Research (Economic Analysis and Policy)**, *Stanford Graduate School of Business*, Stanford, CA.
- 2005–2009 **B.S. in Electrical Engineering**, *University of Maryland, College Park*, College Park, MD.  
Summa cum laude; Electrical and Computer Engineering Chair's Award.
- 2005–2009 **B.A. in Economics with Minor in Mathematics**, *University of Maryland, College Park*, College Park, MD.  
Summa cum laude; Dean's scholar; Senior Dillard Award for best undergraduate thesis.

### Research Interests

- Large-Scale Optimization
- Dynamical Systems and Control
- Radiation Treatment Planning
- Machine Learning
- Statistical Inference

### Publications

- 2020 A. Fu, J. Zhang, and S. Boyd. Anderson accelerated Douglas-Rachford splitting. *SIAM Journal on Scientific Computing*, 42(6):A3560—A3583, November 2020. doi: 10.1137/19M1290097.
- 2020 A. Fu, B. Narasimhan, and S. Boyd. CVXR: An R package for disciplined convex optimization. *Journal of Statistical Software*, 94(14):1–34, August 2020. doi:10.18637/jss.v094.i14.
- 2019 A. Fu, B. Ungun, L. Xing, and S. Boyd. A convex optimization approach to radiation treatment planning with dose constraints. *Optimization and Engineering*, 20(1):277–300, March 2019. doi:10.1007/s11081-018-9409-2.

- 2009 O.J. Glembocki, R.W. Rendell, D.A. Alexon, S.M. Prokes, A. Fu, and M.A. Mastro. Dielectric-substrate-induced surface-enhanced Raman scattering. *Physical Review B*, 80(8):085416, August 2009. doi:10.1103/PhysRevB.80.085416.
- 2006 R.D. Shull, V. Provenzano, A.J. Shapiro, A. Fu, M.W. Lufaso, J. Karapetrova, G. Kletetschka, and V. Mikula. The effect of small metal additions (Co, Cu, Ga, Mn, Al, Bi, Sn) on the magnetocaloric properties of the  $\text{Gd}_5\text{Ge}_2\text{Si}_2$  alloy. *Journal of Applied Physics*, 99(8):08K908, April 2006. doi:10.1063/1.2173632.
- 2005 J.L. Her, K. Koyama, K. Watanabe, V. Provenzano, A. Fu, A.J. Shapiro, and R.D. Shull. High-magnetic field x-ray diffraction studies on  $\text{Gd}_5(\text{Ge}_{2-x}\text{Fe}_x)\text{Si}_2$  ( $x = 0.05$  and  $0.2$ ). *Materials Transactions*, 46(9):2011–2014, September 2005. doi:10.2320/matertrans.46.2011.

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## Working Papers

- 2020 A. Fu, L. Xing, and S. Boyd. Operator splitting for adaptive radiation therapy with nonlinear health dynamics. (In preparation).

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## Software

- A2DR** Python solver using Anderson accelerated Douglas-Rachford splitting. [github.com/cvxgrp/a2dr](https://github.com/cvxgrp/a2dr)
- CVXR** R package for disciplined convex optimization. [cvxr.rbind.io](https://cvxr.rbind.io)
- ConRad** Python library for radiation treatment planning. [github.com/bungun/conrad](https://github.com/bungun/conrad)

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## Conference Talks

- 2019 **INFORMS Conference**, *A Convex Optimization Approach to Radiation Treatment Planning with Dose Constraints*, Seattle, WA.
- 2019 **useR! Conference**, *CVXR: An R Package for Disciplined Convex Optimization*, Toulouse, France.
- 2018 **useR! Conference**, *Disciplined Convex Optimization with CVXR*, Brisbane, QLD.
- 2016 **useR! Conference**, *CVXR: An R Package for Modeling Convex Optimization Problems*, Stanford, CA.

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## Honors and Awards

- 2018 **Chambers Statistical Software Award**, *Honorable Mention*.
- 2016 **Stanford Graduate Fellowship**, *Stanford University*.
- 2009 **Graduate Research Fellowship**, *National Science Foundation*.

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## Research Experience

- 2017–Present **Graduate Research Assistant**, *Information Systems Lab, Stanford University*, Stanford, CA.  
Principal Investigator: Stephen P. Boyd.  
Developed and implemented a fast, scalable algorithm (A2DR) for solving large prox-affine optimization problems.  
Led the design, development, and testing of CVXR, an R package that provides an object-oriented modeling language for convex optimization.
- 2016 **Life Science Research Professional**, *Xing Lab, Stanford School of Medicine*, Stanford, CA.  
Principal Investigator: Lei Xing.  
Developed a convex optimization approach for radiation oncology treatment planning with dose-volume constraints.
- 2011 **Summer Intern**, *Economics and Social Systems, Yahoo! Research*, Berkeley, CA.  
Principal Investigator: Michael A. Schwarz.  
Constructed a theoretical model of market competition when firms have access to targeted advertising technology and analyzed its pure Nash equilibria.

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## Teaching Experience

- Summer 2020 **EE364A: Convex Optimization I**, *Stanford University*, Teaching Fellow.  
Principal instructor for a class of 100 students from a diverse range of backgrounds. Delivered lectures, designed exams, led discussions of problem sets, and supervised a team of 6 course assistants/graders.
- Winter 2020 **EE364A: Convex Optimization I**, *Stanford University*, Course Assistant.
- Spring 2012 **OIT268: Making Data Relevant**, *Stanford Graduate School of Business*, Course Assistant.
- Autumn 2007–2008 **ENEE114: Programming Concepts for Engineers**, *University of Maryland, College Park*, Undergraduate Teaching Fellow.

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## Other Experience

- 2014–2016 **Machine Learning Scientist**, *H2O.ai*, Mountain View, CA.  
Led the design, implementation, and testing of generalized low rank models (GLRM) on H2O, a Java-based distributed statistical software engine.
- 2013 **Summer Intern**, *H2O.ai*, Mountain View, CA.  
Initiated and led the development of the H2O R package, which allows users to fit statistical models in H2O via a REST API.

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## References

- **Stephen P. Boyd**  
*Professor and Chair, Department of Electrical Engineering*  
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- **Balasubramanian Narasimhan**  
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