

# SHAONING HAN

340 Olin Hall  
3650 McClintock Avenue  
Los Angeles, CA 90089-0105

Email: shaoning@usc.edu  
Phone: (412) 628-5788  
Homepage: shaoninghan.github.io

## RESEARCH INTERESTS

Mixed-integer programming, Nonlinear optimization, Conic programming, Machine learning, Large-scale optimization

## EDUCATION

**Ph.D in Industrial and Systems Engineering**, University of Southern California, 2022 (expected)  
• Advisor: Andrés Gómez  
**M.S. in Industrial Engineering and Operations Research**, University of Pittsburgh, 2019  
**B.S. in Mathematics**, University of Science and Technology of China, 2017

## PUBLICATIONS

1. Pang, J.-S. and Han, S. (2021). Some strongly polynomially solvable convex quadratic programs with bounded variables. *Submitted to SIAM Journal on Optimization*
2. Han, S. and Gómez, A. (2021a). Compact extended formulations for low-rank functions with indicator variables. *Submitted to Mathematics of Operations Research*
3. He, Z., Han, S., Gómez, A., Cui, Y., and Pang, J.-S. (2021). Comparing solution paths of sparse quadratic minimization with a Stieltjes matrix. *Submitted to Mathematical Programming*
4. Han, S., Gómez, A., and Atamtürk, A. (2021). The equivalence of optimal perspective formulation and Shor's SDP for quadratic programs with indicator variables. *Operations Research Letters, accepted*
5. Han, S. and Gómez, A. (2021b). Single-neuron convexifications for binarized neural networks. *In preparation*
6. Han, S., Gómez, A., and Atamtürk, A. (2020).  $2 \times 2$  convexifications for convex quadratic optimization with indicator variables. *Mathematical Programming, under major revision*
7. Han, S., Gómez, A., and Prokopyev, O. A. (2019). Fractional 0-1 programming and submodularity. *Journal of Global Optimization, accepted*
8. Atamtürk, A., Gómez, A., and Han, S. (2021). Sparse and smooth signal estimation: Convexification of  $\ell_0$ -formulations. *Journal of Machine Learning Research*, 22(52):1–43

## TEACHING EXPERIENCE

- **ISE 599 (PhD) Mixed-Integer Programming**  
Teaching assistant, University of Southern California, 2021 Spring
- **ISE 530 (MS) Optimization Methods for Analytics**  
Teaching assistant, University of Southern California, 2019 Fall
- **ENGR 0020 (BS) Probability and Statistics for Engineers**  
Teaching assistant, University of Southern California, 2019 Spring
- **ENGR 0020 (BS) Probability and Statistics for Engineers**  
Teaching assistant, University of Pittsburgh, 2018 Fall
- **ENGR 0020 (BS) Probability and Statistics for Engineers**  
Teaching assistant, University of Pittsburgh, 2018 Spring
- **IE 2086 (MS) Decision Models**  
Teaching assistant, University of Pittsburgh, 2017 Fall

## TALKS

- *Fractional 0-1 programming and submodularity.* INFORMS Annual Meeting, Anaheim, CA, October 2021
- *On SDP formulations for quadratic optimization with indicator variables.* INFORMS Annual Meeting, virtual, November 2020

## PROFESSIONAL Member ACTIVITIES

- INFORMS 2018 - Present
- INFORMS Optimization Society 2018 - Present

### Journal Reviewer

- Optimization Letters

### Invited Session Chair

- Algorithms for discrete optimization problems, 2022 Inform's Optimization Society Conference, Greenville, SC, March 2022

## VOLUNTEER EXPERIENCE

**Virtual volunteer at INFORMS Annual Meeting,** Anaheim, CA, October 2021. Responsible for five rooms during one shift day to ensure the smooth progress of meetings.