

# Miju Ahn

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## Appointment

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- Assistant Professor August 2018 - Present  
Department of Operations Research and Engineering Management,  
Southern Methodist University (SMU)

## Education

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- Ph.D. Industrial and Systems Engineering August 2018  
University of Southern California  
Dissertation: “Difference-of-convex learning: optimization with non-convex sparsity functions”  
Advisor: Jong-Shi Pang
- B.A. Applied Mathematics May 2008  
University of California, Berkeley  
Minor in Industrial Engineering and Operations Research

## Journal Publications

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8. **M. Ahn**, H. Gangammanavar and D. Troxell.<sup>1</sup> *Tractable continuous approximations for constraint selection via cardinality minimization*. <https://optimization-online.org/?p=20667>. Revision under review. SIAM Journal on Optimization (2023).
7. C. Ke, S. Shin, Y. Lou and **M. Ahn**. *A generalized formulation for group selection via ADMM*. <https://optimization-online.org/2022/04/8885/> Revision under review. Journal of Scientific Computing (2023).
6. D. Troxell, **M. Ahn** and H. Gangammanavar. *A cardinality minimization approach to security-constrained economic dispatch*. IEEE Transactions on Power Systems 37(5): 3642–3652 (2022).
5. C. Ke, **M. Ahn**, S. Shin and Y. Lou. *Iteratively reweighted group lasso based on log-composite regularization*. SIAM Journal on Scientific Computing 43(5): S655–S678 (2021).
4. **M. Ahn**, X. Luo and S. Shebalov. *Variable pricing: an integrated airline pricing and revenue management model*. Journal of Revenue and Pricing Management 19(6): 421–435 (2020).
3. **M. Ahn**. *Consistency bounds and support recovery of  $d$ -stationary solutions of sparse sample average approximations*. Journal of Global Optimization 78(3): 397–422 (2019).
2. H. Dong, **M. Ahn** and J.S. Pang. *Structural properties of affine sparsity constraints*. Mathematical Programming Series B 176(1–2): 95–135 (2019).
1. **M. Ahn**, J.S. Pang and J. Xin. *Difference-of-convex learning: directional stationarity, optimality and sparsity*. SIAM Journal on Optimization 27(3): 1637–1665 (2017).

## Other Refereed Publication

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1. J. Haddock, L. Kassab, S. Li, A. Kryshchenko, R. Grotheer, E. Sizikova, C. Wang, R.W.M.A. Madushani, **M. Ahn**, D. Needell and K. Leonard. *Semi-supervised nonnegative matrix factorization for document classification*. 2021 55th Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, USA, 2021, pp. 1355–1360.

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<sup>1</sup>Underlined are names of graduate and undergraduate students who have worked under Ahn’s supervision.

## Book Chapter

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1. **M. Ahn**, N. Eikmeier, J. Haddock, L. Kassab, A. Kryshchenko, K. Leonard, D. Needell, R.W.M.A. Madushani, E. Sizikova and C. Wang. *On large-scale dynamic topic modeling with nonnegative CP tensor decomposition*. In: Demir I., Lou Y., Wang X., Welker K. (eds) *Advances in Data Science*. Association for Women in Mathematics Series, Vol 26. Springer, Cham.

## Research Grants

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- Principal Investigator, National Science Foundation (NSF), \$132,024.00, “CRII: III: Learning predictive models with structured sparsity: algorithms and computations”, August 2020 – July 2023.
- Principal Investigator, SMU Lyle School of Engineering Research Seed Funding, \$16,560.00, March 2019 – December 2019.

## Invited Talks

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- Invited speaker, Workshop on Optimization, Equilibrium and Complementarity. The Hong Kong Polytechnic University. August 16-19, 2023.
- (virtual) Seminar. Mathematical Institute for Data Science. Pohang University of Science and Technology. December 6, 2022.
- (virtual) Graduate Mathematics Seminar. Department of Mathematics. California State University, Channel Islands. April 20, 2020.
- Seminar. Department of Industrial and Systems Engineering. Texas A&M University. November 22, 2019.
- ISE Seminar Series. Department of Industrial and Systems Engineering. Lehigh University. October 8, 2019.
- Computational Science Seminar. Department of Mathematical Sciences. University of Texas, Dallas. October 26, 2018.

## Conference Presentations

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### A. International Conferences

- (virtual) 10th International Congress on Industrial and Applied Mathematics (ICIAM). Tokyo, Japan. August, 2023.
- H. Dong (presenter), M. Ahn and J.S. Pang. Structural properties of affine sparsity constraints. SIAM Conference on Optimization. Vancouver, Canada. May, 2017.
- M. Ahn, J.S. Pang (presenter) and J. Xin. Difference-of-convex optimization for statistical learning. International Conference on Continuous Optimization. Tokyo, Japan. August, 2016.

### B. U.S. Conferences

- INFORMS Annual Meeting 2022. Indianapolis, IN. October, 2022.
- International Conference on Continuous Optimization (ICCOPT). Bethlehem, PA. July, 2022.
- INFORMS Optimization Society Conference. Greenville, SC. March 13-15, 2022.
- INFORMS Annual Meeting 2021. Anaheim, California. October, 2021.
- (virtual) SIAM Conference on Optimization. July, 2021.

- (virtual) INFORMS Annual Meeting 2020. November, 2020.
- INFORMS Annual Meeting 2019. Seattle, Washington. October, 2019.
- Association for Women in Mathematics Research Symposium 2019. Rice University. April 7, 2019.
- INFORMS Annual Meeting 2018. Phoenix, Arizona. November, 2018.
- INFORMS Annual Meeting 2017. Houston, Texas. October, 2017.

## Workshops

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- (virtual) 2021 INFORMS Teaching Effectiveness Colloquium. October, 2021.
- Women in Data Science and Mathematics (WiSDM). ICERM, Brown University. July 29 - August 2, 2019.
- Workshop on Recent Developments on Mathematical/Statistical approaches in DATA Science. University of Texas, Dallas. May 31 - June 2, 2019.
- 2019 NSF ENG CAREER Proposal Writing Workshop. Arlington, Virginia. April 1-2, 2019.
- NSF Workshop at SMU on Future Directions in Service, Manufacturing, and Operations Research. Southern Methodist University. March 29-31, 2019.
- 2018 INFORMS New Faculty Colloquium. Phoenix, Arizona. November, 2018.

## Professional Activities

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### A. Reviewer

- Journals Articles:
  - Computational Optimization and Applications
  - IEEE Open Journal of Signal Processing
  - INFORMS Journal on Optimization
  - IISE Transactions
  - Journal of Global Optimization
  - Journal of Machine Learning Research
  - La Matematica
  - Mathematics of Operations Research
  - Mathematical Programming
  - Omega
  - Optimization Methods and Software
  - SIAM Journal on Optimization
- NSF Panel
- INFORMS Best Paper Competition

### B. Session Organizer

- International Symposium on Mathematical Programming (ISMP). Montréal, Canada. July 21-26, 2024.
- International Conference on Continuous Optimization (ICCOPT). Lehigh University, Bethlehem, PA. July 25-28, 2022.
- INFORMS Optimization Society Conference. Greenville, SC. March 13-15, 2022.
- INFORMS Annual Meeting. Seattle, WA. October 20-23, 2019.

### C. Member

- Association for Women in Mathematics (AWM)
- Institute for Operations Research and Management Sciences (INFORMS)
- Mathematical Optimization Society (MOS)

- Society for Industrial and Applied Mathematics (SIAM)

## SMU Presentations

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- Statistical Science Departmental Seminar. Southern Methodist University. October 25, 2019.
- Department of Mathematics Research Colloquium. Southern Methodist University. November 14, 2018.

## Student Advising

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- PhD Students:
- Hassan Nojavan (2023 - Present)
  - Jackson Forner (2022 - Present)
  - Chengyu Ke (2019 - 2023) - initial appointment: American Airlines

- Undergraduate Student:
- David Troxell (2020 - 2021)

Dissertation committee:

- Bin Huang (2022 - Present)
- Niloofer Fadavi (2022 - Present)
- Hao Jiang (2022 - Present)
- Farbod Tavakkoli Khomeini (2021 - Present)
- Steph Buongiorno (2020 - 2023)
- Hedieh Ashrafi (2019 - 2022)
- Siavash Tabrizian (2019 - 2021)
- Mohammed Qaudeer (2019 - 2020)

## Teaching

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- Undergraduate Course
- OREM 3309: Information Engineering

- Graduate Courses
- OREM 5331/7331 | CS 5331/7331: Data Mining
  - OREM 8381: Nonlinear Programming

## Industry Experience

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Operations Research Intern. Prototyped pricing models for airline network revenue management. May to August, 2017. Sabre, Southlake, TX

Last updated: September 2023