

# TAEWOO LEE

Department of Industrial Engineering  
University of Houston  
E209 Engineering Bldg 2, 4722 Calhoun Rd  
Houston, TX 77204-4008  
Tel: 731-743-3361  
Email: tlee6 [at] UH [dot] edu

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## EMPLOYMENT

Assistant Professor 2017-  
Department of Industrial Engineering, University of Houston

Postdoctoral Fellow 2015-2016  
Department of Computational and Applied Mathematics, Rice University

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## EDUCATION

Ph.D., Operations Research 2015  
University of Toronto, Toronto, ON, Canada

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## RESEARCH

### Journal publications (\*authors ordered alphabetically)

- [1] \*T. C. Y. Chan, T. Lee, D. Terekhov, "Inverse Optimization: Closed-form Solutions, Geometry and Goodness of fit," *Management Science*, 65 (3), 1115-1135, 2019
- [2] \*T. C. Y. Chan, T. Lee, "Trade-off preservation in inverse multi-objective convex optimization," *European Journal of Operational Research*, 270 (1), 25-39, 2018
  - Finalist (winner TBA), INFORMS Multicriteria Decision Making (MCDM) Junior Faculty Best Paper Award
- [3] \*K. Ghobadi, T. Lee, H. Mahmoudzadeh, D. Terekhov "Robust inverse optimization," *Operations Research Letters*, 46 (3), 339-344, 2018
- [4] O. Tavaslioglu, T. Lee, S. Valeva, A. J. Schaefer, "On the structure of the inverse-feasible region of a linear program," *Operations Research Letters*, 46 (1), 147152, 2018
- [5] J. J. Boutilier, T. Lee, T. Craig, M. B. Sharpe, T. C. Y. Chan, "Models for predicting objective function weights in prostate cancer IMRT," *Medical Physics*, 42 (4), 15861595, 2015
- [6] \*T. C. Y. Chan, T. Craig, T. Lee, M. B. Sharpe, "Generalized inverse multi-objective optimization with application to cancer therapy," *Operations Research*, 62 (3), 680695, 2014
  - First prize, 2013 Canadian Operational Research Society (CORS) Paper Award
  - First prize, 2013 INFORMS Health Application Society Best Paper Award
- [7] T. Lee, M. Hammad, T. C. Y. Chan, T. Craig, M. B. Sharpe, "Predicting objective function weights from patient anatomy in prostate IMRT treatment planning," *Medical Physics*, 40 (12), 121706, 2013

## Conference publications

- [1] J. J. Boutilier, T. C. Y. Chan, T. Craig, T. Lee, M. B. Sharpe, “A logistic regression model to predict objective function weights in prostate cancer IMRT,” *Medical Physics*, 41 (6), 395, 2014
- [2] T. Lee, M. Hammad, T. C. Y. Chan, T. Craig, M. B. Sharpe, “Predicting objective function weights for IMRT prostate treatment planning using patient anatomy,” *Medical Physics*, 40 (6), 356, 2013
- [3] T. Lee, T. C. Y. Chan, T. Craig, M. B. Sharpe, “Determining critical objectives and importance factors for prostate IMRT treatment planning,” *Medical Physics*, 39 (6), 3845, 2012
- [4] T. C. Y. Chan, T. Lee, T. Craig, M. B. Sharpe, “Determining objective function weights in prostate IMRT using inverse optimization,” *Medical Physics*, 38 (6), 3687, 2011

## Work in progress/under review (title tentative; draft available)

- “Optimizing lung transplantation waitlist composition from the transplant programs perspective” (with D. Mildebrath and A. J. Schaefer; under major revision)
- “Unified framework for model fitting and evaluation in inverse linear optimization” (with R. Mahmoud, T. C. Y. Chan, and D. Terekhov; under review after major revision)
- “Why Greed is Often Good: Approximate and Local Submodularity” (with T. Ajayi and A. J. Schaefer; under review)
- “Quantile Inverse Optimization: Improving Stability in Inverse Linear Programming” (with Z. Shahmoradi; under review)
- “Objective Selection for Cancer Treatment: A Generalized Inverse Optimization Approach” (in preparation)

## Selected conference presentations

- [1] T. Lee, “Trade-off preservation in inverse multi-objective convex optimization,” invited for INFORMS MCDM Junior Faculty Best Paper Award session to be held in Seattle, WA, October 2019
- [2] P. Dorali, T. Lee, “Optimal timing of teleretinal screening for diabetic eye disease,” invited for INFORMS Annual Meeting 2019 to be held in Seattle, WA, October 2019
- [3] Z. Shahmoradi, T. Lee, “Quantile inverse optimization: Improving stability in inverse linear programming,” invited for INFORMS Annual Meeting 2019 to be held in Seattle, WA, October 2019
- [4] T. Ajayi, T. Lee, A. J. Schaefer, “Best objective selection in radiation therapy treatment planning,” invited for INFORMS Annual Meeting 2019 to be held in Seattle, WA, October 2019
- [5] T. Lee, Z. Shahmoradi, “Learning preferences from noisy data using inverse linear programming with application to diet guidelines,” INFORMS Healthcare 2019, Boston, MA, July 2019
- [6] T. Lee, Z. Shahmoradi, “Quantile inverse optimization: Improving stability in inverse optimization,” INFORMS Healthcare 2019, Boston, MA, July 2019
- [7] T. Lee, “Inferring objective functions from noisy and uncertain data in healthcare applications,” POMS Annual Conference 2019, Washington D.C., May 2019

- [8] T. Lee, "Tradeoff preservation in inferring objective function weights in multiobjective optimization," INFORMS Annual Meeting, Phoenix, AZ, November 2018
- [9] T. Lee, Z. Shahmoradi, "Inferring objective functions from inconsistent data in healthcare and energy applications," INFORMS Annual Meeting, Phoenix, AZ, November 2018
- [10] T. Ajayi, T. Lee, A. J. Schaefer, "Data-driven objective selection in multi-objective optimization," INFORMS Annual Meeting, Phoenix, AZ, November 2018
- [11] T. Lee, "Knowledge-based, multicriteria radiation therapy treatment planning," University of Houston, College of Engineering, November 2018
- [12] T. Lee, T. Ajayi, A. J. Schaefer, "Data-driven criteria selection in radiation therapy treatment planning," IISE Annual Meeting, Orlando, FL, May 2018
- [13] T. Ajayi, T. Lee, A. J. Schaefer, "Data-driven objective selection in multi-objective optimization," INFORMS Computing Society Conference, Austin, TX, January 2017
- [14] T. Lee, "Automated knowledge-based radiation therapy treatment planning: optimization and learning approach," 4th International Conference on Big Data and Information Analytics, Houston, TX, December 2018
- [15] T. Lee, K. Ghobadi, H. Mahmoudzadeh, D. Terekhov, "Robust inverse optimization with application to dietary recommendation," INFORMS Annual Meeting, Houston, TX, October 2017
- [16] T. Ajayi, T. Lee, A. J. Schaefer, "Data-driven objective selection in multi-objective optimization," INFORMS Annual Meeting, Houston, TX, October 2017
- [17] T. Lee, "Data-driven objective selection in multi-objective optimization," University of Waterloo, Department of Management Science, September 2017
- [18] T. Lee, T. Ajayi, A. J. Schaefer, "Data-driven objective selection in multi-objective optimization: inverse optimization approach," INFORMS Annual Meeting, Nashville, TN, November 2016
- [19] T. Lee, K. Ghobadi, H. Mahmoudzadeh, D. Terekhov, "Robust inverse optimization," CORS Annual Conference, Banff, AB, June 2016
- [20] T. Lee, "Generalized inverse optimization with applications to cancer therapy," University of Houston, Department of Industrial Engineering, April 2016
- [21] T. Lee, "Learning trade-offs in multicriteria optimization for radiation therapy," INFORMS Annual Meeting, Philadelphia, PA, November 2015
- [22] T. Lee, T. C. Y. Chan, "Inverse optimization for multi-objective optimization," INFORMS 2015, Philadelphia, PA, November 2015
- [23] T. Lee, "Generalized inverse optimization with applications to cancer therapy," University of Houston, Department of Industrial Engineering, November 2015
- [24] T. Lee, "Generalized inverse optimization with applications to cancer therapy," Rice University, Department of Computational and Applied Mathematics, November 2015
- [25] T. Lee, "Generalized inverse optimization with applications to cancer therapy," Seoul National University, Department of Industrial Engineering, June 2015
- [26] T. Lee, "Generalized inverse optimization with applications to cancer therapy," POSTECH, Department of Industrial and Management Engineering, June 2015

- [27] T. Lee, T. C. Y. Chan, “Learning trade-offs in multicriteria optimization for radiation therapy,” CORS/INFORMS International, Montreal, QC, June 2015
- [28] T. Lee, “Generalized inverse optimization with applications to cancer therapy,” Purdue University, School of Industrial Engineering, April 2015
- [29] T. Lee, “Generalized inverse optimization with applications to cancer therapy,” University of Illinois Urbana-Champaign, ISE, February 2015
- [30] T. Lee, T. C. Y. Chan, “Preference preservation in radiation therapy treatment planning via inverse convex optimization,” INFORMS 2014, San Francisco, CA, Nov 2014
- [31] T. Lee, T. C. Y. Chan, “Preference learning in radiation therapy treatment planning via inverse convex optimization,” CORS 2014, Ottawa, ON, May 2014
- [32] T. Lee, M. Hammad, T. C. Y. Chan, T. Craig, M. B. Sharpe, “Predicting objective function weights for multi-criteria IMRT planning using patient anatomy,” INFORMS 2013, Minneapolis, MN, Oct 2013
- [33] T. Lee, M. Hammad, T. C. Y. Chan, T. Craig, M. B. Sharpe, “Predicting objective function weights for IMRT prostate treatment planning using patient anatomy,” AAPM 2013, Indianapolis, IN, Aug 2013
- [34] T. Lee, M. Hammad, T. C. Y. Chan, T. Craig, M. B. Sharpe, “Predicting objective function weights for multi-criteria IMRT planning using patient anatomy,” INFORMS Healthcare 2013, Chicago, IL, June 2013
- [35] T. Lee, T. C. Y. Chan, T. Craig, M. B. Sharpe, “Generalized inverse multi-objective optimization with application to cancer therapy,” INFORMS Healthcare 2013, Chicago, IL, June 2013
- [36] T. Lee, T. C. Y. Chan, T. Craig, M. B. Sharpe, “Generalized inverse multi-objective optimization with application to cancer therapy,” CORS 2013, Vancouver, BC, May 2013
- [37] T. Lee, T. C. Y. Chan, T. Craig, M. B. Sharpe, “Determining convex objective functions in the multi-objective IMRT treatment planning problem,” INFORMS 2012, Phoenix, AZ, Oct 2012
- [38] T. Lee, T. C. Y. Chan, T. Craig, M. B. Sharpe, “Determining critical objectives and importance factors for prostate IMRT treatment planning,” AAPM 2012, Charlotte, NC, July 2012
- [39] T. Lee, T. C. Y. Chan, T. Craig, M. B. Sharpe, “Determining critical objective functions for a multi-objective IMRT treatment planning problem,” CORS 2012, Niagara Falls, ON, June 2012
- [40] T. Lee, T. C. Y. Chan, T. Craig, M. B. Sharpe, “Approximate inverse optimization for intensity-modulated radiation therapy planning,” INFORMS Healthcare 2011, Montreal, QC, June 2011
- [41] T. Lee, T. C. Y. Chan, T. Craig, M. B. Sharpe, “An inverse optimization approach to determine objective function weights in radiation therapy,” INFORMS 2010, Austin, TX, Nov 2010

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## AWARDS and HONORS

Finalist for the INFORMS MCDM Junior Faculty Best Paper Award (winner TBA)	2019
Outstanding Teacher Award – Department of Industrial Engineering, University of Houston	2019
INFORMS New Faculty Colloquium	2017
IISE New Faculty Colloquium	2017

INFORMS Doctoral Colloquium	2014
First prize at the Canadian Operational Research Society (CORS) Paper Competition	2013
First prize at the INFORMS Healthcare Applications Society (HAS) Paper Competition	2013
The Queen Elizabeth II Graduate Scholarships in Science and Technology	2013
Natural Sciences and Engineering Research Council of Canada (NSERC) CREATE	2010–2013
Ontario Graduate Scholarship (OGS)	2012
MITACS Accelerate	2012
The Queen Elizabeth II Graduate Scholarships in Science and Technology	2011
Barbara and Frank Milligan Fellowship	2010

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## TEACHING

INDE3333: Engineering Economy	Spring 2017 (4.72/5.00; level avg 4.1; N=24)
	Spring 2018 (4.60/5.00; level avg 4.2; N=53)
INDE3382: Stochastic Models	Fall 2017 (4.80/5.00; level avg 4.0; N=26)
	Fall 2018 (4.80/5.00; level avg 4.0; N=21)
INDE7397: Decision Modeling under Uncertainty	Spring 2019 (5.00/5.00; level avg 4.6; N=8)
INDE7397: Simulation Modeling of Healthcare Systems	Spring 2019 (no evaluation taken)

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## SERVICE

### Journal Review

Annals of Operations Research  
Computers & Industrial Engineering  
European Journal of Operational Research  
IIE Transactions  
Management Science  
Medical Physics  
Operations Research  
Operations Research for Health Care  
Optimization and Engineering  
Optimization Letters  
Physics in Medicine and Biology  
Production and Operations Management  
SIAM Journal on Optimization

### Cluster/Session chair

Track Chair: OR in Health, Medicine and Life Science, IFORS 2020, Seoul, South Korea  
Inverse optimization in healthcare applications, INFORMS 2019, Seattle, WA  
Data and models in healthcare operations, INFORMS Healthcare 2019, Boston, MA  
Data-driven modeling in healthcare, INFORMS 2018, Phoenix, AZ  
Data-driven decision making in healthcare, INFORMS 2017, Houston, TX  
Healthcare logistics with uncertainty, 21st IFORS, Quebec City, QC  
Inverse optimization, 21st IFORS, Quebec City, QC  
Optimization in radiation therapy, INFORMS Computing Society 2017, Austin, TX  
Inverse optimization: Theory, INFORMS 2016, Nashville, TN  
Inverse optimization: Applications, INFORMS 2016, Nashville, TN  
Optimization methods for cancer therapy, INFORMS International 2015, Montreal, QC  
Optimization methods for radiation therapy, INFORMS International 2015, Montreal, QC  
Inverse optimization in healthcare, INFORMS 2014, San Francisco, CA

