TAEWOO LEE

Department of Industrial Engineering
University of Pittsburgh
1008 Benedum Hall
Pittsburgh, PA 15261
Email: taewoo.lee [at] pitt [dot] edu
Citizenship: Canada

ACADEMIC APPOINTMENTS

University of Pittsburgh

Assistant Professor — 2022-present
Department of Industrial Engineering

Rice University

Adjunct Assistant Professor — 2021-2023
Postdoctoral Fellow — 2015-2016
Department of Computational Applied Mathematics and Operations Research

University of Houston

Assistant Professor — 2017-2022
Department of Industrial Engineering, Cullen College of Engineering
Department of Decision and Information Sciences, Bauer College of Business (joint appointment)

EDUCATION

Ph.D., Operations Research, University of Toronto — 2015

Master of Engineering, Industrial Engineering, University of Toronto — 2010

Bachelor of Engineering, Industrial Engineering, Korea University, Seoul, South Korea — 2008

RESEARCH

Journal publications (*authors ordered alphabetically for OR/MS journals)

[1] D. Mildebrath, T. Lee, S. Sinha, A. J. Schaefer, A. O. Gaber. "Characterizing rational transplant program response to outcome-based regulation." ***Operations Research***, Forthcoming, 2023

[2] T. Ajayi, T. Lee, A. J. Schaefer. "A note on the implications of approximate submodularity in discrete optimization." ***Optimization Letters***, 17 (1), 1–17, 2023

[3] P. Dorali, Z. Shahmoradi, C. Y. Weng, T. Lee. "Cost-effectiveness analysis of a personalized, teleretinal-inclusive screening policy for diabetic retinopathy utilizing Markov modeling." ***Ophthalmology Retina***, 7 (6), 532–542, 2023

[4] P. Dorali, R. Limongi, F. K. Torsha, C. Y. Weng, T. Lee. "Utilizing simulation to update routine diabetic retinopathy screening policies." ***Proceedings of the 2022 Winter Simulation Conference***, 1128–1139, 2022

[5] T. Ajayi, T. Lee, A. J. Schaefer. "Objective selection for cancer treatment: An inverse optimization approach." ***Operations Research***, 70 (3), 1717–1738, 2022

[6] Z. Shahmoradi, T. Lee. "Optimality-based clustering." ***Operations Research Letters***, 50 (2), 205–212, 2022

[7] Z. Shahmoradi, T. Lee. "Quantile inverse optimization." ***Operations Research***, 70(4), 2538–2562, 2022

[8] *A. Babier, T. C. Y. Chan, T. Lee, R. Mahmood, D. Terekhov. "An ensemble learning framework for model fitting and evaluation in inverse linear optimization." ***INFORMS Journal on Optimization***, 3 (2), 119-126, 2021

[9] *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

[10] *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

[11] *K. Ghobadi, T. Lee, H. Mahmoudzadeh, D. Terekhov. "Robust inverse optimization." ***Operations Research Letters***, 46 (3), 339-344, 2018

[12] 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), 147-152, 2018

[13] 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), 1586-1595, 2015

[14] *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), 680-695, 2014

[15] 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] P. Dorali, Z. Shahmoradi, C. Y. Weng, T. Lee. "Cost-effectiveness analysis of personalized diabetic retinopathy screening recommendations." *Investigative Ophthalmology & Visual Science*, 63 (7) 3086, 2022 [*ARVO Paper Presentation*]

[2] F. K. Torsha, Y. Lin, L. Fan, T. Lee. "Electricity load forecasting under COVID-19." *Proceedings of 2021 North American Power Symposium (NAPS)*, 1–6, 2021

[3] T. Lee, P. Dorali, Z. Shahmoradi, C. Y. Weng. "Developing behavior-based diabetic retinopathy screening guidelines." *Investigative Ophthalmology & Visual Science*, 62 (8), 2652, 2021

[4] P. Dorali, R. G. L. Cifelli, C. Y. Weng, T. Lee. "Location-based analysis on optimizing teleretinal imaging accessibility in a large safety-net system." *Investigative Ophthalmology & Visual Science*, 62 (8), 1141, 2021

[5] P. Dorali, R. Limongi, C. Y. Weng, T. Lee. "Cost-effectiveness analysis for population-based teleretinal diabetic retinopathy screening policies in an urban healthcare system." *Investigative Ophthalmology & Visual Science*, 61 (7), 3072, 2020

[6] T. Lee, P. Dorali, Z. Shahmoradi, C. Y. Weng. "Personalized teleretinal screening recommendations for patients with diabetes mellitus." *Investigative Ophthalmology & Visual Science*, 61 (7), 829, 2020 [*ARVO Paper Presentation*]

[7] 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

[8] 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

[9] 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

[10] 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

Book chapters

[1] T. Lee, D. Terekhov. "Inverse Optimization." *Encyclopedia of Optimization*, edited by P. M. Pardalos and O. A. Prokopyev

[2] D. Terekhov, T. Lee. "Inverse Integer Optimization." *Encyclopedia of Optimization*, edited by P. M. Pardalos and O. A. Prokopyev

[3] T. Lee, D. Terekhov. "Data-Driven Inverse Optimization." *Encyclopedia of Optimization*, edited by P. M. Pardalos and O. A. Prokopyev

Work in progress **(title tentative; draft available)**

- "Geographically-based teleretinal screening for diabetic eye disease"
  (with P. Dorali, C. Y. Weng, and A. M. Williams)
- "Personalized clinical decision support tool for diabetic retinopathy screening"
  (with P. Dorali, Z. Shahmoradi, and C. Y. Weng)
- "Optimizing lung transplantation waitlist composition from the transplant programs perspective"
  (with D. Mildebrath, S. Sinha, and A. J. Schaefer)
- "Learning personalized diabetic retinopathy screening preferences"
  (with F. Torsha and Z. Shahmoradi)

Selected conference presentations **(by students or myself)**

[1] T. Lee, P. Dorali, C. Y. Weng, L. M. Wasser, A. M. Williams. "Cost-effectiveness analysis of geographically-based teleretinal diabetic retinopathy screening policies for urban and rural populations." ARVO Annual Meeting 2023, April 2023

[2] P. Dorali, R. Limongi, F. K. Torsha, C. Y. Weng, T. Lee. "Utilizing simulation to update routine diabetic retinopathy screening policies." 2022 Winter Simulation Conference, December 2022

[3] Z. Shahmoradi, F. Torsha, T. Lee. "Learning Personalized Diabetic Retinopathy Screening Preferences." INFORMS Annual Meeting 2022, October 2022

[4] P. Dorali, Z. Shahmoradi, C. Y. Weng, T. Lee. "Developing personalized diabetic retinopathy screening recommendations." INFORMS Annual Meeting 2022, October 2022

[5] T. Lee, Z. Shahmoradi. "Optimality-based clustering." INFORMS Annual Meeting 2022, October 2022

[6] F. Torsha, T. Lee. "Learning personalized diabetic retinopathy screening preferences." IISE Annual Conference & Expo 2022, May 2022

[7] P. Dorali, Z. Shahmoradi, C. Y. Weng, T. Lee. "Cost-effectiveness analysis of personalized diabetic retinopathy screening recommendations." ARVO Annual Meeting, May 2022 [*Paper Presentation*]

[8] P. Dorali, Z. Shahmoradi, C. Y. Weng, T. Lee. "Developing personalized diabetic retinopathy screening recommendations." INFORMS Annual Meeting 2021, October 2021

[9] T. Lee, Z. Shahmoradi. "Optimality-based clustering." INFORMS Annual Meeting 2021, October 2021

[10] F. Torsha, T. Lee. "Learning personalized diabetic retinopathy screening preferences." INFORMS Annual Meeting 2021, October 2021

[11] P. Dorali, Z. Shahmoradi, C. Y. Weng, T. Lee. "Developing personalized diabetic retinopathy screening recommendations." INFORMS Healthcare 2021, July 2021

[12] T. Lee and Z. Shahmoradi. "Optimality-based clustering: An inverse optimization approach." The Canadian Operational Research Society (CORS) Annual Meeting, June 2021

[13] P. Dorali, R. G. L. Cifelli, C. Y. Weng, T. Lee. "Developing personalized diabetic retinopathy recommendations with teleretinal imaging." The American Telemedicine Association (ATA) Annual Conference and Expo 2021, June 2021

[14] T. Lee, P. Dorali, Z. Shahmoradi, C. Y. Weng. "Developing behavior-based diabetic retinopathy screening guidelines." ARVO Annual Meeting, May 2021

[15] P. Dorali, R. G. L. Cifelli, C. Y. Weng, T. Lee. "Location-based analysis on optimizing teleretinal imaging accessibility in a large safety-net system." ARVO Annual Meeting, May 2021

[16] T. Lee. "Optimal resource allocation for diabetic eye disease screening for minority patients." 2021 CMS Quality Conference, March 2021

[17] T. Lee, P. Dorali, Z. Shahmoradi, C. Y. Weng. "Personalized teleretinal screening recommendations for patients with diabetes mellitus." INFORMS Annual Meeting 2020, November 2020

[18] T. Lee, Z. Shahmoradi. "Optimality-based clustering: An inverse optimization approach." INFORMS Annual Meeting 2020, November 2020

[19] Z. Shahmoradi, T. Lee. "Quantile inverse optimization: Improving stability in inverse linear programming." INFORMS Annual Meeting 2020, November 2020

[20] P. Dorali, R. Limongi, C. Y. Weng, T. Lee. "Cost-effectiveness analysis for population-based teleretinal diabetic retinopathy screening policies in an urban healthcare system." ARVO Annual Meeting, May 2020

[21] T. Lee, P. Dorali, Z. Shahmoradi, C. Y. Weng. "Personalized teleretinal screening recommendations for patients with diabetes mellitus." ARVO Annual Meeting, May 2020 [*Paper Presentation*]

[22] Z. Shahmoradi, T. Lee. "Optimality-based clustering." 2019 Conference on Artificial Intelligence, Machine Learning, and Business Analytics, Philadelphia, PA, December 2019

[23] T. Lee. "Trade-off preservation in inverse multi-objective convex optimization." INFORMS Annual Meeting 2019, Seattle, WA, October 2019

[24] P. Dorali, T. Lee. "Optimal timing of teleretinal screening for diabetic eye disease." INFORMS Annual Meeting 2019, Seattle, WA, October 2019

[25] Z. Shahmoradi, T. Lee. "Quantile inverse optimization: Improving stability in inverse linear programming." INFORMS Annual Meeting 2019, Seattle, WA, October 2019

[26] T. Ajayi, T. Lee, A. J. Schaefer. "Best objective selection in radiation therapy treatment planning." INFORMS Annual Meeting 2019, Seattle, WA, October 2019

[27] 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

[28] T. Lee, Z. Shahmoradi. "Quantile inverse optimization: Improving stability in inverse optimization." INFORMS Healthcare 2019, Boston, MA, July 2019

[29] P. Dorali, T. Lee. "Optimal timing of teleretinal screening for diabetic eye disease." INFORMS Annual Healthcare 2019, Boston, MA, July 2019

[30] T. Lee. "Inferring objective functions from noisy and uncertain data in healthcare applications." POMS Annual Conference 2019, Washington D.C., May 2019

[31] 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

[32] T. Lee. "Tradeoff preservation in inferring objective function weights in multiobjective optimization." INFORMS Annual Meeting, Phoenix, AZ, November 2018

[33] T. Lee, Z. Shahmoradi. "Inferring objective functions from inconsistent data in healthcare and energy applications." INFORMS Annual Meeting, Phoenix, AZ, November 2018

[34] T. Ajayi, T. Lee, A. J. Schaefer. "Data-driven objective selection in multi-objective optimization." INFORMS Annual Meeting, Phoenix, AZ, November 2018

[35] T. Lee. "Knowledge-based, multicriteira radiation therapy treatment planning." University of Houston, College of Engineering, November 2018

[36] T. Lee, T. Ajayi, A. J. Schaefer. "Data-driven criteria selection in radiation therapy treatment planning." IISE Annual Meeting, Orlando, FL, May 2018

[37] T. Ajayi, T. Lee, A. J. Schaefer. "Data-driven objective selection in multi-objective optimization." INFORMS Computing Society Conference, Austin, TX, January 2017

[38] T. Lee, K. Ghobadi, H. Mahmoudzadeh, D. Terekhov. "Robust inverse optimization with application to dietary recommendation." INFORMS Annual Meeting, Houston, TX, October 2017

[39] T. Ajayi, T. Lee, A. J. Schaefer. "Data-driven objective selection in multi-objective optimization." INFORMS Annual Meeting, Houston, TX, October 2017

[40] T. Lee. "Data-driven objective selection in multi-objective optimization." University of Waterloo, Department of Management Science, September 2017

[41] 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

[42] T. Lee, K. Ghobadi, H. Mahmoudzadeh, D. Terekhov. "Robust inverse optimization." CORS Annual Conference, Banff, AB, June 2016

[43] T. Lee. "Generalized inverse optimization with applications to cancer therapy." University of Houston, Department of Industrial Engineering, April 2016

[44] T. Lee. "Learning trade-offs in multicriteria optimization for radiation therapy." INFORMS Annual Meeting, Philadelphia, PA, November 2015

[45] T. Lee, T. C. Y. Chan. "Inverse optimization for multi-objective optimization." INFORMS 2015, Philadelphia, PA, November 2015

[46] T. Lee. "Generalized inverse optimization with applications to cancer therapy." University of Houston, Department of Industrial Engineering, November 2015

[47] T. Lee. "Generalized inverse optimization with applications to cancer therapy." Rice University, Department of Computational and Applied Mathematics, November 2015

[48] T. Lee. "Generalized inverse optimization with applications to cancer therapy." Seoul National University, Department of Industrial Engineering, June 2015

[49] T. Lee. "Generalized inverse optimization with applications to cancer therapy." POSTECH, Department of Industrial and Management Engineering, June 2015

[50] T. Lee, T. C. Y. Chan. "Learning trade-offs in multicriteria optimization for radiation therapy." CORS/INFORMS International, Montreal, QC, June 2015

[51] T. Lee. "Generalized inverse optimization with applications to cancer therapy." Purdue University, School of Industrial Engineering, April 2015

[52] T. Lee. "Generalized inverse optimization with applications to cancer therapy." University of Illinois Urbana-Champaign, ISE, February 2015

[53] T. Lee, T. C. Y. Chan. "Preference preservation in radiation therapy treatment planning via inverse convex optimization." INFORMS 2014, San Francisco, CA, Nov 2014

[54] T. Lee, T. C. Y. Chan. "Preference learning in radiation therapy treatment planning via inverse convex optimization." CORS 2014, Ottawa, ON, May 2014

[55] 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

[56] 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

[57] 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

[58] 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

[59] 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

[60] 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

[61] 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

[62] 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

[63] 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

[64] 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

Grants and Funded Projects

- "Collaborative Research: Performance Incentives for Organ Transplantation Centers"
  National Science Foundation (NSF) CMMI#1826297, 2018–2022; PI 100%
- "Collaborative Research: Optimal Design of a Teleretinal Screening Program for At-Risk Patients"
  NSF CMMI#1908244, 2019–2022; PI 100%
- "Optimal Resource Allocation for Diabetic Eye Disease Screening for Minority Patients"
  Department of Health and Human Services (DHHS), 2019–2022; PI 100%
- "Collaborative Research: Optimal Design of a Teleretinal Screening Program for At-Risk Patients"
  NSF CMMI#2243071, 2022–2023; PI 100%
- " Bilevel Optimization Approach to Integrating Personalized Treatment with Healthcare Resource Planning"
  NSF CMMI#2321399, 2023–2026; PI 100%

TEACHING

IE1082: Probabilistic Methods in Operations Research (Undergrad)	2023S (4.77/5.00; N=30)
IE3093: Stochastic Programming (Grad)	2022F (5.00/5.00; N=3)
INDE7397: Decision Modeling under Uncertainty (Grad)	2022S (4.60/5.00; N=5)
	2021S (5.00/5.00; N=4)
	2020S (5.00/5.00; N=8)
	2019S (5.00/5.00; N=3)
INDE3382: Stochastic Models (Undergrad)	2021F (4.90/5.00; N=15)
	2020F (4.70/5.00; N=26)
	2019F (4.70/5.00; N=16)
	2018F (4.80/5.00; N=21)
	2017F (4.80/5.00; N=26)
INDE7397: Simulation Modeling of Healthcare Systems (Grad)	2019S (no eval taken)
INDE3333: Engineering Economy (Undergrad)	2018S (4.60/5.00; N=53)
	2017S (4.72/5.00; N=24)

AWARDS and HONORS

Research Excellence Award – Cullen College of Engineering, University of Houston	2021
INFORMS Junior Faculty Best Paper Award – MCDM (Finalist)	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
Canadian Operational Research Society (CORS) Paper Competition (Winner)	2013
INFORMS Healthcare Applications Society (HAS) Paper Competition (Winner)	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

SERVICE

Journal Referee

Annals of Operations Research
Computers & Industrial Engineering
European Journal of Operational Research
IISE Transactions
INFORMS Journal on Computing
Management Science
Manufacturing and Service Operations Management (MSOM)
Medical Decision Making
Medical Physics
Omega
Operations Research
Operations Research for Health Care
Optimization and Engineering
Optimization Letters
Physics in Medicine and Biology
PLOS One
Production and Operations Management (POM)
Scientific Reports
SIAM Journal on Optimization
Socio-Economic Planning Sciences

Conference Cluster/Session Chair/Committee

Healthcare Applications session, Winter Simulation Conference, 2022
INFORMS Annual Meeting Poster Competition Judge, 2022
INFORMS Doing Good With Good OR Paper Competition Committee, 2020, 2021, 2022
POMS - College of Healthcare Operations Management Best Paper Competition Judge, 2021, 2022
Track Co-Chair of IISE Annual Conference - Operations Research Track, 2022
Co-Chair of 2021 INFORMS Doing Good With Good OR Paper Competition, 2021
INFORMS Health Application Society Best Student Paper Competition Judge, 2021
Area Chair of OR in Health, Medicine and Life Science, IFORS 2021, Remote
National Science Foundation Panel Review
Data-driven inverse optimization, INFORMS 2020, Remote
Innovations in community-based screening, ARVO 2020, Baltimore, MD

Optimization under uncertainty, 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, IFORS 2017, Quebec City, QC
Inverse optimization, IFORS 2017, 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
Optimization in radiation therapy treatment planning, CORS 2014, Ottawa, ON
Optimization in radiation therapy treatment planning, INFORMS 2013, Minneapolis, MN

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