GIAN-GABRIEL GARCIA

Curriculum Vitæ

Department of Industrial & Systems Engineering 213 SIEG Box Number 352650 Seattle, WA 98195 Phone: (206) 543-1427 Email: garciagg@uw.edu Web: giangabrielgarcia.com

EDUCATIONAL HISTORY

University of Michigan, Ann Arbor, MI PhD, Industrial and Operations Engineering July 2020

Dissertation: "Predictive and Prescriptive Analytics for Concussion Management Decisions"

University of Michigan, Ann Arbor, MI MS, Industrial and Operations Engineering December 2016

University of Pittsburgh, Pittsburgh, PA BS, Industrial Engineering, *Summa Cum Laude* December 2014

EMPLOYMENT HISTORY

University of Washington Seattle, WA, USA Assistant Professor, Industrial & Systems Engineering, 8/2025–Present

Georgia Institute of Technology

Atlanta, GA, USA

Harold E. Smalley Early Career Professor, Industrial and Systems Engineering, 8/2024-8/2025 *Pillar 1 Co-lead*, Pediatric Technology Center, 5/2024-8/2025

Assistant Professor, H. Milton Stewart School of Industrial and Systems Engineering, 8/2021-8/2025

Harvard Medical School

Boston, MA, USA

Postdoctoral Research Fellow, MGH Institute for Technology Assessment, 7/2020-7/2021

AWARDS AND HONORS

First Prize, INFORMS Minority Issues Forum Paper Competition, 2024 Outstanding Faculty Achievement in Research - Early Career, Georgia Tech ISyE, 2024

Annual CIOS Teaching Award, Georgia Tech, 2023

Diversity, Equity, and Inclusion Fellow, Georgia Tech ISyE, 2022

CIOS Honor Roll: Student Recognition of Excellence in Teaching, Georgia Tech, 2022-2024

Best Paper, IISE Transactions Focus Issue on Operations Engineering & Analytics, 2021

Towner Prize for Distinguished Academic Achievement, University of Michigan, 2020

First Prize, SMDM Lee B. Lusted Prize in Quantitative Methods & Theoretical Developments, 2020

First Prize, INFORMS Minority Issues Forum Paper Competition, 2020

First Prize, SMDM Lee B. Lusted Prize in Quantitative Methods & Theoretical Developments, 2018

INFORMS Bonder Scholarship for Applied OR in Health Services, 2018

First Prize, INFORMS Minority Issues Forum Poster Competition, 2017

NSF Graduate Research Fellowship, 2017-2020

Rackham Merit Fellowship, University of Michigan, 2015-2020

PUBLICATIONS

Refereed archival journal publications

- J1. L. L. Czerniak, G.-G. P. Garcia, M. W. Genthe, Y. Xia, M. S. Lavieri, M. A. McCrea, T. W. McAllister, P. F. Pasquina, S. W. Liebel, and S. P. Broglio (2025). Prediction of symptom burden, cognitive status, and risk of psychological distress in NCAA athletes with sport-related concussion(s): findings from the NCAA-DoD CARE Consortium. Annals of Biomedical Engineering (Accepted)
- J2. R. Parab, J. Feeley, M. Valero, L. Chadalawada, G.-G. P. Garcia, S. Sil Kar, A. Madabhushi, M. Breton, H. Shao, and F. J. Pasquel (2025). How Artificial Intelligence and Machine Learning are Transforming Diabetes Care. Endocrine Practice (Accepted)
- J3. Y. Yang¹, C.-Y. Liao¹, E. Keyvanshokooh, H. Shao, M. B. Weber, F. Pasquel, and **G.-G. P. Garcia** (2025). *A Responsible Framework for Assessing, Selecting, and Explaining Machine Learning Models in Cardiovascular Disease Outcomes Among People With Type 2 Diabetes: Methodology and Validation Study.* JMIR Medical Informatics **13**, e66200.
- J4. H. S. Pandey¹, B. Lahijanian², J. D. Schmidt, R. C. Lynall, S. P. Broglio, T. W. McAllister, M. A. McCrea, P. F. Pasquina, and G.-G. P. Garcia (2025). *Quantifying the Diagnostic Utility of Baseline Testing:* An Analysis of the NCAA-DoD CARE Consortium Dataset. American Journal of Sports Medicine 53(1), 181–191
- J5. S. J. Lee¹, X. Gong³, and **G.-G. P. Garcia** (2024). *Modified Monotone Policy Iteration for Interpretable Policies in Markov Decision Processes and the Impact of State Ordering Rules*. Annals of Operations Research **347**, 783–841
- J6. S. Ma, A. Dehghanian, G.-G. P. Garcia, and N. Serban (2024). *Learning Hidden Markov Models with Structured Dynamics*. INFORMS Journal on Computing **37**(3), 531–556
- J7. **G.-G. P. Garcia**, L. N. Steimle, W. J. Marrero, and J. B. Sussman (2024). *Interpretable Policies and the Price of Interpretability in Hypertension Treatment Planning*. Manufacturing & Service Operations Management **26**(1), 80–94. ⁴
- J8. L. B. Lempke, A. J. Boltz, G.-G. P. Garcia, R. A. Syrydiuk, H. S. Pandey¹, M. A. McCrea, T. W. McAllister, and S. P. Broglio (2023). Optimizing Baseline and Post-Concussion Assessments Through Factor Structure Analysis: Findings from the NCAA-DoD CARE Consortium. The Clinical Neuropsychologist 38(5), 1156–1174
- J9. G.-G. P. Garcia, L. L. Czerniak, M. S. Lavieri, S. W. Liebel, K. Van Pelt, P. F. Pasquina, T. W. McAllister, M. A. McCrea, S. P. Broglio, and CARE Consortium Investigators (2023). Estimating the Relationship Between the Symptom-Free Waiting Period and Injury Rates after Return-to-Play from Concussion: A Simulation Analysis Using CARE Consortium Data. Sports Medicine 53(10), 2513–2528.

¹Graduate student advisee

²Postdoc advisee

³Undergraduate student advisee

⁴First Prize, 2024 INFORMS Minority Issues Forum Paper Competition

- J10. S. J. Lee¹, G.-G. P. Garcia, K. K. Stanhope, M. Platner, and S. L. Boulet (2023). *Interpretable machine learning to predict adverse perinatal outcomes: Examining marginal predictive value of risk factors throughout pregnancy*. American Journal of Obstetrics and Gynecology MFM 5(10), 101096.
- J11. **G.-G. P. Garcia**, M. S. Lavieri, T. W. McAllister, M. A. McCrea, S. P. Broglio, and the CARE Consortium Investigators (2023). *Reducing the price of Naïveté in return-to-play from sports-related concussion*. en. Production and Operations Management **32**, 3081–3099. ⁵
- J12. S. W. Liebel, C. G. Turner, A. C. Svirsko, G.-G. P. Garcia, P. F. Pasquina, T. W. McAllister, M. A. McCrea, S. P. Broglio, and the CARE Consortium Investigators (2023). *Temporal Network Analysis of Neurocognitive Functioning and Psychological Symptoms in Collegiate Athletes after Concussion*. en. Journal of Neurotrauma, neu.2022.0431.
- J13. L. L. Czerniak, S. W. Liebel, H. Zhou, G.-G. P. Garcia, M. S. Lavieri, M. A. McCrea, T. W. McAllister, S. P. Broglio, and the CARE Consortium Investigators (2023). Sensitivity and Specificity of the ImPACT Neurocognitive Test in Collegiate Athletes and United States Military Cadets with ADHD and/or LD: Findings from the NCAA-DoD CARE Consortium. Sports Medicine 53, 747–759.
- J14. K. E. Nolan, J. B. Caccese, A. P. Kontos, T. A. Buckley, G.-G. P. Garcia, N. Port, S. P. Broglio, T. W. McAllister, M. McCrea, P. F. Pasquina, J. P. Hayes, and on behalf of the CARE Consortium Investigators (2023). Primary and Secondary Risk Factors Associated With Concussion Symptom Clusters in Collegiate Athletes: Results From the NCAA-DoD Grand Alliance CARE Consortium. en. Orthopaedic Journal of Sports Medicine 11(4), 232596712311635.
- J15. J. B. Caccese, G.-G. P. Garcia, A. P. Kontos, N. Port, K. Valerio, S. P. Broglio, M. McCrea, T. W. McAllister, P. F. Pasquina, T. A. Buckley, and CARE Consortium Investigators (2023). *Test–Retest Reliability and Efficacy of Individual Symptoms in Concussion Management*. en. Clinical Journal of Sport Medicine 33(1), 52–60.
- J16. G.-G. P. Garcia, R. Dehghanpoor, E. J. Stringfellow, M. Gupta, J. Rochelle, E. Mason, T. A. Pujol, and M. S. Jalali (2022). *Identifying and Characterizing Medical Advice-Seekers on a Social Media Forum for Buprenorphine Use*. International Journal of Environmental Research and Public Health 19(10), 6281.
- J17. **G.-G. P. Garcia**, E. J. Stringfellow, C. DiGennaro, N. Poellinger, J. Wood, S. Wakeman, and M. S. Jalali (2022). *Opioid overdose decedent characteristics during COVID-19*. Annals of Medicine **54**(1), 1081–1088.
- J18. C.-Y. Liao¹, G.-G. P. Garcia, C. DiGennaro, and M. S. Jalali (2022). *Racial Disparities in Opioid Overdose Deaths in Massachusetts*. JAMA Network Open **5**(4), e229081.
- J19. G.-G. P. Garcia, C. M. Schumb, M. S. Lavieri, H. Koffijberg, T. W. McAllister, M. A. McCrea, and S. P. Broglio (2022). *Developing Insights for Possible and Probable Acute Concussions Using Cluster Analysis*. Journal of Neurotrauma 39(1-2), 102–113.
- J20. C. DiGennaro, G.-G. P. Garcia, E. J. Stringfellow, S. Wakeman, and M. S. Jalali (2021). *Changes in characteristics of drug overdose death trends during the COVID-19 pandemic*. International Journal of Drug Policy **98**(Accepted), 103392.
- J21. L. L. Czerniak, S. W. Liebel, **G.-G. P. Garcia**, M. S. Lavieri, M. A. McCrea, T. W. McAllister, and S. P. Broglio (2021). *Sensitivity and Specificity of Computer-Based Neurocognitive Tests in Sport-Related Concussion: Findings from the NCAA-DoD CARE Consortium.* Sports Medicine **51**(2), 351–365.
- J22. S. W. Liebel, K. Van Pelt, **G.-G. P. Garcia**, L. L. Czerniak, M. A. McCrea, T. W. McAllister, and S. P. Broglio (2020). *The Relationship between Sport-Related Concussion and Sensation-Seeking*. International Journal of Molecular Sciences **21**(23), 9097.
- J23. G.-G. P. Garcia, J. Yang, M. S. Lavieri, T. W. McAllister, M. A. McCrea, and S. P. Broglio (2020). Optimizing Components of the Sport Concussion Assessment Tool for Acute Concussion Assessment.

⁵Winner, 2020 SMDM Lee B. Lusted Prize in *Quantitative Methods & Theoretical Developments*

- Neurosurgery **87**(5), 971–981.
- J24. G.-G. P. Garcia, M. S. Lavieri, R. Jiang, M. A. McCrea, T. W. McAllister, and S. P. Broglio (2020). Data-driven stochastic optimization approaches to determine decision thresholds for risk estimation models. IISE Transactions 52(10), 1098–1121.
- J25. G.-G. P. Garcia, M. S. Lavieri, C. Andrews, X. Liu, M. P. Van Oyen, M. A. Kass, M. O. Gordon, and J. D. Stein (2019). Accuracy of Kalman Filtering in Forecasting Visual Field and Intraocular Pressure Trajectory in Patients With Ocular Hypertension. JAMA Ophthalmology 137(12), 1416–1423.
- J26. **G.-G. P. Garcia**, M. S. Lavieri, R. Jiang, T. W. McAllister, M. A. McCrea, and S. P. Broglio (2019). A Data-Driven Approach to Unlikely, Possible, Probable, and Definite Acute Concussion Assessment. Journal of Neurotrauma **36**(10), 1571–1583.
- J27. G.-G. P. Garcia, K. Nitta, M. S. Lavieri, C. Andrews, X. Liu, E. Lobaza, M. P. Van Oyen, K. Sugiyama, and J. D. Stein (2019). *Using Kalman Filtering to Forecast Disease Trajectory for Patients With Normal Tension Glaucoma*. American Journal of Ophthalmology 199. Publisher: Elsevier Inc., 111–119.
- J28. G. J. Schell, G.-G. P. Garcia, M. S. Lavieri, J. B. Sussman, and R. A. Hayward (2019). *Optimal Coinsurance Rates for a Heterogeneous Population under Inequality and Resource Constraints*. IISE Transactions **51**(1), 74–91.
- J29. **G.-G. P. Garcia**, S. P. Broglio, M. S. Lavieri, M. McCrea, and T. McAllister (2018). *Quantifying the Value of Multidimensional Assessment Models for Acute Concussion: An Analysis of Data from the NCAA-DoD Care Consortium.* Sports Medicine **48**(7), 1739–1749.
- J30. M. H. Mofrad, G.-G. P. Garcia, L. M. Maillart, B. A. Norman, and J. Rajgopal (2016). Customizing Immunization Clinic Operations to Minimize Open Vial Waste. Socio-Economic Planning Sciences 54(March 2016), 1–17.

Conference proceedings and other non-journal articles

Refereed conference papers

- C1. V. Nori-Naga, S. Sundar, and **G.-G. P. Garcia** (2023). Analysis of Machine Learning and Ensemble Methods for Forecasting COVID-19 Cases in California. In: *Proceedings of the IISE Annual Conference & Expo 2023*, pp.New Orleans, LA
- C2. **G.-G. P. Garcia**, L. L. Czerniak, M. S. Lavieri, S. W. Liebel, M. A. McCrea, T. W. McAllister, P. F. Pasquina, and S. P. Broglio (2022). Simulation-Optimization to Distinguish Optimal Symptom Free Waiting Period for Return-to-Play Decisions in Sport-Related Concussion. In: 2022 Winter Simulation Conference (WSC). Singapore: IEEE, pp.1021–1032. https://ieeexplore.ieee.org/document/10015285/

Refereed conference abstracts

- C3. D. Chung, K. B. Adams, Y. Yang¹, **G.-G. P. Garcia**, A. Roy, X.-L. Leong, and V. Ahuja (2025). *Predicting Pediatric Surgical Case Duration Using Machine Learning: Leveraging Team Dynamics and Case Flow Attributes*. 137th Annual Meeting of The Southern Surgical Association, Hotsprings, VA
- C4. Y. Yang¹, T. Liu, C.-Y. Liao¹, S. J. Lee¹, E. Keyvanshokooh, H. Shao, M. B. Weber, F. J. Pasquel, and G.-G. P. Garcia (2024). *Development and Fairness Evaluation of CVD Risk Prediction Models for*

⁶Best Paper, 2021 IISE Transactions Focus Issue on *Operations Engineering & Analytics*; Winner, 2020 INFORMS Minority Issues Forum Paper Competition; Winner, 2018 SMDM Lee B. Lusted Prize in *Quantitative Methods & Theoretical Developments*; First Place, 2017 INFORMS Minority Issues Forum Poster Competition

⁷Cited in American Medical Society for Sports Medicine position statement on concussion in sport (doi: 10.1136/bjsports-2018-100338)

- Patients with Type-2 Diabetes. Society for Medical Decision Making 46th Annual Meeting, Boston, MA
- C5. C.-Y. Liao¹, E. Keyvanshokooh, F. J. Pasquel, and **G.-G. P. Garcia** (2024). *Augmenting Individualized Treatment Planning via Data-Driven Clinical Role Model Selection*. Society for Medical Decision Making 46th Annual Meeting, Boston, MA
- C6. H. S. Pandey¹, B. Lahijanian², J. D. Schmidt, R. C. Lynall, S. P. Broglio, T. W. McAllister, M. A. McCrea, P. F. Pasquina, and **G.-G. P. Garcia** (2024). *Value of Baseline Testing in Concussion Diagnosis*. ACSM Annual Meeting & World Congress, Boston, MA
- C7. C.-Y. Liao¹, E. Keyvanshokooh, and **G.-G. P. Garcia** (2023). *Data-driven Counterfactual Optimization for Personalized Clinical Decision-Making*. Society for Medical Decision Making 45th Annual Meeting, Philadelphia, PA
- C8. C.-Y. Liao¹, **G.-G. P. Garcia**, K. Paynabar, and M. S. Jalali (2023). *Improving Prediction of Opioid-involved Overdose Deaths with Multivariate Spatio-Temporal Hawkes Process*. IISE Annual Conference, New Orleans, LA
- C9. V. Nori-Naga, S. Sundar, and **G.-G. P. Garcia** (2023). *Analysis of Machine Learning and Ensemble Methods for Forecasting COVID-19 Cases in California*. IISE Annual Conference, New Orleans, LA
- C10. S. J. Lee¹ and **G.-G. P. Garcia** (2022). A Preference-sensitive Approach to Optimal Screening Problems with Multiple Objectives: Application to Breast Cancer Screening. Society for Medical Decision Making 44th Annual Meeting, Seattle, WA
- C11. C.-Y. Liao¹, **G.-G. P. Garcia**, K. Paynabar, and M. S. Jalali (2022). *A Novel Spatio-Temporal Modeling Framework for Improving Public Health Surveillance: An Application to Opioid-related Drug Overdose Deaths*. Society for Medical Decision Making 44th Annual Meeting, Seattle, WA
- C12. **G.-G. P. Garcia**, L. N. Steimle, W. J. Marrero, and J. B. Sussman (2022). *Design, Analysis, and Optimization of Interpretable Policies for Hypertension Treatment Planning*. Society for Medical Decision Making 44th Annual Meeting, Seattle, WA
- C13. **G.-G. P. Garcia**, N. Ghaffarzadegan, and M. S. Jalali (2022). *A Model-based Analysis of Screening Selection Rates for Post-traumatic Stress Disorder*. Society for Medical Decision Making 44th Annual Meeting, Seattle, WA
- C14. **G.-G. P. Garcia**, M. S. Lavieri, T. W. McAllister, M. A. McCrea, and S. P. Broglio (2022). *Design and Assessment of a Novel Decision-Theoretic Approach to Personalize Return-to-play from Concussion*. 6th International Consensus Conference on Concussion in Sport, Amsterdam, Netherlands
- C15. D. W. Van Pelt, G.-G. P. Garcia, S. R. Hinds, D. R. Howell, J McCollum, S. J. Svoboda, and K. L. Van Pelt (2022). Daily Concussion Symptom Presence and Severity is Highly Variable in a Healthy Population Over a 14-day Monitoring Period. 6th International Consensus Conference on Concussion in Sport. 6th International Consensus Conference on Concussion in Sport, Amsterdam, Netherlands
- C16. K. L. Van Pelt, **G.-G. P. Garcia**, S. R. Hinds, D. R. Howell, J McCollum, S. J. Svoboda, and D. W. Van Pelt (2022). *Time of Day and Day of Week Do Not Meaningfully Impact Concussion Symptom Scores In Healthy Young Adults. 6th International Consensus Conference on Concussion in Sport*. 6th International Consensus Conference on Concussion in Sport, Amsterdam, Netherlands
- C17. J. B. Caccese, G.-G. P. Garcia, A. P. Kontos, N. L. Port, K. Valerio, S. P. Broglio, M. A. McCrea, T. W. McAllister, P. F. Pasquina, and T. A. Buckley (2022). Test-retest Reliability And Efficacy Of Individual Symptoms In Concussion Management. ACSM Annual Meeting & World Congress, San Diego, CA
- C18. **G.-G. P. Garcia**, L. N. Steimle, W. J. Marrero, and J. B. Sussman (2022). *An Analysis of Structured Optimal Policies for Hypertension Treatment Planning*. IISE Annual Conference, Seattle, WA
- C19. **G.-G. P. Garcia**, M. S. Lavieri, T. W. McAllister, M. A. McCrea, and S. P. Broglio (2020). *The Value of Incorporating Symptom-Reporting Behavior in Optimal Treatment Decisions: An Application to Return-to-Play from Sports-Related Concussion*. Society for Medical Decision Making 42nd Annual

Meeting, Chicago, IL

- C20. **G.-G. P. Garcia**, M. S. Lavieri, C. Andrews, X. Liu, M. P. Van Oyen, M. A. Kass, M. O. Gordon, and J. D. Stein (2019). *Using a Machine Learning Technique Called Kalman Filtering to Forecast Conversion from Ocular Hypertension to Primary Open Angle Glaucoma*. The Association for Research in Vision and Ophthalmology, Vancouver, BC
- C21. **G.-G. P. Garcia**, M. S. Lavieri, R. Jiang, M. A. McCrea, T. W. McAllister, and S. P. Broglio (2018). A Novel Data-Driven Framework for Improving Risk-Based Medical Diagnosis with Application to Acute Concussion Assessment. Society for Medical Decision Making 40th Annual Meeting, Montreal, OC
- C22. M. S. Lavieri, X. Liu, G.-G. P. Garcia, Z. Zhou, E. Lobaza, J. Wang, K. Sugiyama, K. Nitta, C. Andrews, M. P. Van Oyen, and J. D. Stein (2017). *Using Kalman Filtering to Personalize the Monitoring of Persons with Normal Tension Glaucoma*. The Association for Research in Vision and Ophthalmology, Baltimore, MD
- C23. **G.-G. P. Garcia**, M. S. Lavieri, and S. P. Broglio (2017). *A Markov Decision Process to Model Symptom Self-Reporting Behavior in Concussion Management*. The 3rd Multidisciplinary Conference on Reinforcement Learning and Decision Making, Ann Arbor, MI
- C24. **G.-G. P. Garcia**, M. S. Lavieri, and S. P. Broglio (2016). *Quantifying Risk Thresholds for On-field Concussion Diagnosis*. Industrial and Systems Engineering Research Conference, Anaheim, CA

Books, chapters, patents, etc.

Book chapters

- B1. A. K. McNealey, W. J. Marrero, L. N. Steimle, and **G.-G. P. Garcia** (2023). "Optimization Methods for Interpretable Treatment and Screening". In: *Encyclopedia of Optimization*. 3rd ed. Springer, Cham. https://doi.org/10.1007/978-3-030-54621-2_866-1
- B2. S. J. Lee¹, H. S. Pandey¹, and **G.-G. P. Garcia** (2023). "Designing Interpretable Machine Learning Models using Mixed Integer Programming". In: *Encyclopedia of Optimization*. 3rd ed. Springer, Cham

Submitted papers

- S1. Y. Yang¹, T. Liu, C.-Y. Liao¹, S. J. Lee¹, E. Keyvanshokooh, H. Shao, M. B. Weber, F. J. Pasquel, and **G.-G. P. Garcia** (2025). *Development and Evaluation of Cardiovascular Disease Risk Models for Patients with Type 2 Diabetes*. (Submitted)
- S2. H. S. Pandey¹, **G.-G. P. Garcia**, S. P. Broglio, M. A. McCrea, T. W. McAllister, P. F. Pasquina, and L. B. Lempke (2025). *Comprehensive Assessment under Constrained Time (CompACT): An Operationally Constrained Machine Learning Approach*. (Under revision)⁸
- S3. **G.-G. P. Garcia** and J. C. Martinez Mori (2024). *Who's the GOAT? Sports Rankings and Data-Driven Random Walks on the Symmetric Group.* (Under revision)
- S4. C.-Y. Liao¹, E. Keyvanshokooh, F. J. Pasquel, and **G.-G. P. Garcia** (2024). *Augmenting Individualized Treatment Planning via Data-Driven Clinical Role Model Selection*. (In preparation)⁹
- S5. Y. Xie, **G.-G. P. Garcia**, E. Song, and N. Serban (2024). *Evaluating Access to Pediatric Psychosocial Services: A Discrete Event Simulation Approach under Uncertainty*. (Under review)
- S6. **G.-G. P. Garcia**, N. Ghaffarzadegan, and M. S. Jalali (2024). *Optimal Screening Selection Rates for Post-traumatic Stress Disorder and The Impact of Social Stigma*. (Under revision)

⁸First Prize, 2024 INFORMS Minority Issues Forum Poster Competition awarded to Himadri Pandey

⁹Finalist, 2023 SMDM Lee B. Lusted Prize in *Quantitative Methods & Theoretical Developments* awarded to Che-Yi Liao

MISCELLANEOUS

Outside Professional Work for Compensation (1460s)

Name of Organization	Start Date	End Date	Number of Days	Description of Activity
Synaptek, LLC	9/2021	9/2023		Technical consultant

OTHER SCHOLARLY ACTIVITY

Invited lectures and seminars

- 1. University of Washington, Department of Industrial and Systems Engineering, *Leveraging Operations Research for Responsible AI in Medicine*, December 2024
- 2. University of California Berkeley, Department of Industrial Engineering and Operations Research, Leveraging Operations Research for Responsible AI in Medicine, December 2024
- 3. Georgia Tech, Alpha Pi Mu Lunch and Learn Seminar, *Healthcare, Optimization, Machine Learning, and Everything In Between*, April 2024
- 4. Georgia Tech, Institute for People and Technology, *Toward Fairer Type-2 Diabetes Diagnosis and Care: A Long-term and Pipeline-level View*, March 2024
- 5. INFORMS, Junior Faculty Interest Group Seminar, Leveraging Operations Research for Responsible AI in Medicine: Generating Clinical Role Models for Personalized Treatment Target Selection, February 2024
- 6. Emory University, Georgia Center for Diabetes Translation Research, *Designing Responsible Artificial Intelligence for Diabetes Care*, September 2023
- 7. Rochester Institute of Technology, Department of Industrial and Systems Engineering, *Interpretable Policies and the Price of Interpretability in Hypertension Treatment Planning*, October 2022
- 8. Synaptek, Optimizing Acute Concussion Assessment: Insights from Predictive Analytics, May 2022
- 9. Georgia Tech, Center for Machine Learning, An Analysis of Structured Optimal Policies for Hypertension Treatment Planning: The Tradeoff Between Optimality and Interpretability, March 2022
- 10. Virginia Tech, Department of Industrial and Systems Engineering, An Analysis of Structured Optimal Policies for Hypertension Treatment Planning: The Tradeoff Between Optimality and Interpretability, November 2021
- 11. Harvard Medical School, MGH Institute for Technology Assessment, *Predictive and Prescriptive Analytics for Concussion Management Decisions*, August 2020
- 12. University of Minnesota, Department of Industrial and Systems Engineering, *Predictive and Prescriptive Analytics for Concussion Management Decisions*, January 2020
- 13. Clemson University, Department of Industrial Engineering, *Predictive and Prescriptive Analytics for Concussion Management Decisions*, January 2020
- 14. Purdue University, School of Industrial Engineering and Regenstrief Center for Healthcare Engineering, *Predictive and Prescriptive Analytics for Concussion Management Decisions*, December 2019
- 15. Georgia Tech, H. Milton Stewart School of Industrial and Systems Engineering, *Predictive and Prescriptive Analytics for Concussion Management Decisions*, December 2019
- 16. University of Florida, Department of Industrial and Systems Engineering, *Predictive and Prescriptive Analytics for Concussion Management Decisions*, December 2019
- 17. North Carolina State University, Edward P. Fitts Department of Industrial & Systems Engineering Department, *Data-driven Decision Thresholds for Risk Estimation Models with Application to Acute Concussion Assessment*, April 2019

18. University of Michigan, Department of Industrial and Operations Engineering, *Data-driven Optimization for Concussion Management Decisions*, September 2018

Presentations given at conferences¹⁰

Invited talks

- 1. S. J. Lee¹ and **G.-G. P. Garcia** (2024). A Data-driven Optimization Approach to Designing Parsimonious Treatment Guidelines. INFORMS Annual Meeting (Bonder Scholars Session), Seattle, WA
- 2. S. J. Lee¹ and **G.-G. P. Garcia** (2024). *Composite Clustered Multi-Task Learning for Prediction of Adverse Pregnancy Outcomes*. INFORMS Annual Meeting, Seattle, WA
- 3. C.-Y. Liao¹, E. Keyvanshokooh, F. J. Pasquel, and **G.-G. P. Garcia** (2024). *Augmenting Individualized Treatment Planning via Data-Driven Clinical Role Model Selection*. INFORMS Annual Meeting, Seattle, WA
- 4. A. K. McNealey, M. E. Meredith, G.-G. P. Garcia, and L. N. Steimle (2024). *Race-Neutral Calculator Still Disadvantages Black Patients*. INFORMS Annual Meeting, Seattle, WA
- 5. **G.-G. P. Garcia** (2023). Leveraging Operations Research and Machine Learning for Robust, Interpretable, and Equitable Models in Healthcare. Health Systems: The Next Generation 2023, Georgia Tech, Atlanta, GA
- 6. H. S. Pandey¹, **G.-G. P. Garcia**, and L. B. Lempke (2023). *Optimizing Concussion Assessment: A Mixed-Integer Optimization Approach with Time Constraints*. INFORMS Annual Meeting, Phoenix, AZ
- 7. S. J. Lee¹ and **G.-G. P. Garcia** (2023). *Clustered Multi-Task Learning for Prediction of Adverse Pregnancy Outcomes*. INFORMS Annual Meeting, Phoenix, AZ
- 8. C. X. Bugg², **G. P. Garcia**, Y. Yang¹, and K. R. Siegel (2023). *Implementing Federal Food Service Guidelines in Federal and Private Worksite Cefeteria in the UNited States Improves Human and Planetary Health*. INFORMS Annual Meeting, Phoenix, AZ
- 9. C.-Y. Liao¹, **G. P. Garcia**, and E. Keyvanshokooh (2023). *Data-Driven Counterfactual Optimization for Personalized Clinical Decision-Making*. INFORMS Annual Meeting, Phoenix, AZ
- 10. W. J. Marrero, **G.-G. P. Garcia**, L. N. Steimle, and J. B. Sussman (2023). *Interpretable Policies and the Price of Interpretability in Hypertension Treatment Planning*. INFORMS Annual Meeting, Phoenix, AZ
- 11. **G.-G. P. Garcia**, L. N. Steimle, W. J. Marrero, and J. B. Sussman (2023). *Interpretable Policy Design with Application to Hypertension Treatment Planning*. INFORMS Annual Meeting (Bonder Scholars Session), Phoenix, AZ
- 12. S. J. Lee¹ and **G.-G. P. Garcia** (2023). *Clustered Multi-Task Learning for Prediction of Adverse Pregnancy Outcomes*. INFORMS Healthcare, Toronto, ON
- 13. B. Lahijanian², G.-G. P. Garcia, J. D. Schmidt, and R. C. Lynall (2023). *Concussion Prediction Using Interpretable Machine Learning Models: An Evaluation of Baseline Testing in the NCAA-DoD CARE Consortium.* INFORMS Healthcare, Toronto, ON
- G.-G. P. Garcia, L. L. Czerniak, M. S. Lavieri, S. W. Liebel, K. L. Van Pelt, P. F. Pasquina, M. A. McCrea, T. W. McAllister, and S. P. Broglio (2023). Simulation Analysis for Return-to-Play from Sports-Related Concussion. INFORMS Healthcare, Toronto, ON
- 15. **G.-G. P. Garcia**, C.-Y. Liao¹, K. Paynabar, D. Zheng, Y. Xie, and M. S. Jalali (2023). *A Locally Operating Spatio-Temporal Mutually Exciting Point Process with Dynamic Network for Improving Opioid Overdose Death Prediction*. INFORMS Healthcare, Toronto, ON
- 16. C.-Y. Liao¹, G.-G. P. Garcia, K. Paynabar, and M. S. Jalali (2023). A Novel Spatio-Temporal

¹⁰Presenting author is listed first

- Model for Improving Public Health Surveillance: An Application to Opioid-Related Overdose Deaths. POMS Annual Meeting, Orlando, FL
- 17. C.-Y. Liao¹, **G.-G. P. Garcia**, K. Paynabar, and M. S. Jalali (2023). *Improving Opioid-involved Overdose Deaths Prediction with Multivariate Spatio-Temporal Hawkes Process*. IISE Annual Conference, New Orleans, LA
- 18. S. J. Lee¹ and **G.-G. P. Garcia** (2022). A Tolerance-based Approach to Lexicographic Multi-objective Partially Observed Markov Decision Processes. INFORMS Annual Meeting, Indianapolis, IN
- 19. C.-Y. Liao¹, **G.-G. P. Garcia**, K. Paynabar, and M. S. Jalali (2022). *Improving Prediction of Opioid-involved Overdosed Deaths with Multivariate Spatiao-temporal Hawkes Process*. INFORMS Annual Meeting, Indianapolis, IN
- 20. **G.-G. P. Garcia**, L. N. Steimle, W. J. Marrero, and J. B. Sussman (2022). *Design and Analysis of Interpretable Policies for Hypertension Treatment Planning*. INFORMS Annual Meeting (Bonder Scholars Session), Indianapolis, IN
- 21. **G.-G. P. Garcia** (2022). *Optimal Clinical Assessment and Return to Play After Concussion*. 5th Annual NCAA-US Department of Defense Grand Alliance Concussion Conference (Virtual meeting)
- 22. **G.-G. P. Garcia**, L. N. Steimle, and W. J. Marrero (2021). *An Analysis of Structured Optimal Policies for Hypertension Treatment Planning: The Tradeoff Between Optimality and Interpretability*. INFORMS Annual Meeting, Anaheim, CA
- 23. **G.-G. P. Garcia**, M. S. Lavieri, T. W. McAllister, M. A. McCrea, and S. P. Broglio (2021). *Estimating the Value of Incorporating Patient Behavior in Return to Play from Concussion*. INFORMS Annual Meeting (Bonder Scholars Session), Anaheim, CA
- 24. **G.-G. P. Garcia**, C. DiGennaro, E. J. Stringfellow, J. Wood, N. Poellinger, and M. S. Jalali (2021). *A Multi-state Analysis of Opioid Overdose Death Trends Since the Onset of COVID-19*. INFORMS Healthcare (Invited Session), Virtual Meeting
- 25. **G.-G. P. Garcia**, L. N. Steimle, and W. J. Marrero (2021). *An Analysis of Structured Optimal Policies for Hypertension Treatment Planning*. INFORMS Healthcare (Bonder Scholars Session), Virtual Meeting
- 26. **G.-G. P. Garcia**, M. S. Lavieri, T. W. McAllister, M. A. McCrea, and S. P. Broglio (2020). *The Value of Incorporating Symptom-Reporting Behavior in Return-to-play from Concussion*. INFORMS Annual Meeting (Bonder Scholars Session), National Harbor, MD
- 27. **G.-G. P. Garcia**, M. S. Lavieri, and S. P. Broglio (2019). *Optimizing Treatment Decisions Under Strategically Reported Symptoms*. INFORMS Annual Meeting (Bonder Scholars Session), Seattle, WA
- 28. **G.-G. P. Garcia**, M. S. Lavieri, R. Jiang, T. W. McAllister, M. A. McCrea, and S. P. Broglio (2019). Data-driven Stochastic Optimization Approaches to Determine Decision Thresholds for Risk Estimation Models. INFORMS Annual Meeting (Invited Session), Seattle, WA
- 29. **G.-G. P. Garcia**, J. Yang, M. S. Lavieri, T. W. McAllister, M. A. McCrea, and S. P. Broglio (2019). Doing More with Less: Applying Modern Predictive Modeling Methods to Improve Acute Concussion Assessment. INFORMS Healthcare (Bonder Scholars Session), Boston, MA
- 30. **G.-G. P. Garcia**, M. S. Lavieri, T. W. McAllister, M. A. McCrea, and S. P. Broglio (2019). *Optimizing Treatment Decisions Under Objective Clinical Measures and Strategically Reported Symptoms*. INFORMS Healthcare (Invited Session), Boston, MA
- 31. **G.-G. P. Garcia**, M. S. Lavieri, and S. P. Broglio (2018). *Optimization Approaches for Concussion Management Decisions*. INFORMS Annual Meeting (Invited Session), Phoenix, AZ
- 32. **G.-G. P. Garcia**, M. S. Lavieri, and S. P. Broglio (2018). *Data-driven Optimization Models for Concussion Management Decisions*. INFORMS Annual Meeting (Bonder Scholars Session), Phoenix, AZ
- 33. G.-G. P. Garcia, M. S. Lavieri, R. Jiang, M. McCrea, T. W. McAllister, S. P. Broglio, and CARE

- Consortium Investigators (2017). A Novel Framework to Determine Decision Thresholds for Medical Diagnosis. INFORMS Annual Meeting (Invited Session), Houston, TX
- 34. **G.-G. P. Garcia**, M. S. Lavieri, and S. P. Broglio (2016). *An Optimization Approach to Concussion Management*. INFORMS Annual Meeting (Invited Session), Nashville, TN

Contributed talks

- 1. J. C. Martinez Mori and **G.-G. P. Garcia** (2024). Who is the GOAT? Sports Rankings and Random Walks on the Symmetric Group. INFORMS Annual Meeting, Seattle, WA
- 2. H. S. Pandey¹, B. Lahijanian², J. D. Schmidt, R. C. Lynall, S. P. Broglio, T. W. McAllister, M. A. McCrea, P. F. Pasquina, and **G.-G. P. Garcia** (2024). *Examining Diagnostic Utility of Baseline Testing*. TREAT Sport-related Concussion Conference, Pittsburgh, PA
- 3. H. S. Pandey¹, L. B. Lempke, S. P. Broglio, T. W. McAllister, M. A. McCrea, P. F. Pasquina, and **G.-G. P. Garcia** (2024). *Designing Accurate Concussion Assessments under Time Constraints*. TREAT Sport-related Concussion Conference, Pittsburgh, PA
- 4. A. Popoola, C. X. Bugg², **G.-G. P. Garcia**, and K. Paynabar (2024). *Reducing Homelessness Among Foster Care Youth: A Predictive Approach Using Ensemble Methods*. Third Annual Workshop on AI and Analytics for Social Good, College Park, MD
- A. K. McNealey, M. E. Meredith, G.-G. P. Garcia, L. N. Steimle, K. K. Stanhope, M. H. Platner, and S. L. Boulet (2024). *Race-Blind Calculator Still Disadvantages Black Patients*. Emerging Researchers National Conference in STEM, Washington D.C.
- 6. C. G. Turner, A. Svirsko, **G.-G. P. Garcia**, and S. W. Liebel (2022). *Trajectory Analysis of Concussion Symptoms*. INFORMS Annual Meeting, Indianapolis, IN
- 7. C. G. Turner, A. Svirsko, G.-G. P. Garcia, and S. W. Liebel (2021). *Temporal Network Architectures of Neurocognitive and Psychological Symptoms in Collegiate Athletes with Sports-related Concussion*. INFORMS Annual Meeting, Anaheim, CA
- 8. **G.-G. P. Garcia**, M. S. Lavieri, R. Jiang, T. W. McAllister, M. A. McCrea, and S. P. Broglio (2019). *Data-driven Stochastic Optimization Approaches to Determine Decision Thresholds for Risk Estimation Models*. ORIE Young Investigators Workshop, Cornell University, Ithaca, NY

Professional society memberships

- Production and Operations Management Society, 2025-Present
- Institute for Operations Research and the Management Sciences (INFORMS), 2015-Present
- Society for Medical Decision Making, 2018-Present
- Institute for Industrial and Systems Engineering, 2016, 2021-Present

GRADUATE STUDENTS

Chaired Doctoral Degrees

At Georgia Tech

1. Sun Ju Lee, Chair

Dissertation: Optimization for Interpretable Predictive and Prescriptive Modeling in Healthcare

Degree Program: Operations Research

Graduated: Summer 2025

Awards:

• ISyE George Family Fellowship, Fall 2024

- Finalist, SMDM Lee B. Lusted Prize in *Quantitative Methods and Theoretical Developments*, 2022
- President's Fellow, 2019-2023

Current position: Assistant Professor, Freeman College of Management, Bucknell University

Current Doctoral Students

At the University of Washington

1. Jade Li, Co-chair with Shan Liu

Status: Started Fall 2025

2. **Panus Sawetpiyakul**, Chair Status: Started Fall 2025

At Georgia Tech

3. Himadri Pandey, Chair

Degree Program: Machine Learning Status: Passed qualifying exam, Fall 2024

Awards:

- First Prize, INFORMS Minority Issues Forum Poster Competition, 2024
- Georgia HIMSS David Cowan Scholarship, 2024
- ISyE George Family Fellowship, Fall 2024
- ISyE Phillip J. and Delores A. Scott Graduate Student Health and Wellness Award, 2024
- 4. Che-Yi Liao, Co-chair with Kamran Paynabar

Degree Program: Machine Learning

Status: Passed qualifying exam, Spring 2023; Dissertation proposal examination, Spring 2024 Awards:

- First Prize, INFORMS Bonder Scholarship, 2024
- Thos and Clair Muller Research Fellowship in Health Analytics and Health Systems, 2024
- Finalist, INFORMS Bonder Scholarship, 2023
- Finalist, SMDM Lee B. Lusted Prize in *Quantitative Methods and Theoretical Developments*, 2023
- First Prize, SMDM Lee B. Lusted Prize in *Quantitative Methods and Theoretical Developments*, 2022
- ISyE George Family Fellowship, Spring 2022, Fall 2023

RESEARCH ACTIVITIES

Funded Research

Funding Agency	Title	Your role with other PI's and co-PI's	Total Amount, Your Amount, (Subcontracts if any, University Match- ing if any)	Dates (start - finish)
DoD	Optimizing Mild Traumatic Brain Injury Diagnostics and Healthcare Costs Using a Mathematical Framework and Clinical Decision Support Tool Across the Military	co-I; L. Lempke (PI, Virginia Commonwealth University), K. Cameron (co-I, West Point), B. Dengler (co-I, Fort Worth), C. Dismuke-Greer (co-I, Veterans Affairs - Palo Alto)	\$664,500/\$2,500,000	9/2025 - 8/2029
Children's Health- care of Atlanta (CHOA)	Algorithm for Counteracting the Clinical Onset of Rapid Deteri- oration in Pediatric Patients	PI 7/2024-8/2025, Collaborator 8/2025-6/2029; K. Wang (PI, Georgia Tech 8/2025-6/2029), N. Muthu (PI, CHOA)	\$2,500,000	7/2024- 6/2029
NIH AIM- AHEAD	Design and Assessment of Fair Algorithms for Counterfac- tual Explanations to Generate Digital Role Models for Pa- tients with Type 2 Diabetes and Hypertension (Grant No. 10T20D032581)	PI; H. Shao (co-PI, Emory University), E. Keyvan- shokooh (co-PI, Texas A&M University), M.B. Weber (co-I, Emory Uni- versity), F. Pasquel (co-I, Emory University)	\$300,000/\$992,472	9/2023- 9/2025
Georgia Tech	Toward Fairer Diagnosis and Care of Type 2 Diabetes: A Long-Term and Pipeline-Level View	Co-PI; J. Ziani (PI, Georgia Tech), J. Julien (co-I, Georgia Tech)	\$6,413/\$16,034	9/2023- 4/2024
Seth Bon- der Foun- dation	Bonder Scholars Research Fund	PI	\$5,000	7/2023
AHRQ	R03: Design, Analysis, and Optimization of Equitable and Value-based Baseline Testing Policies for Sports- Related Concussion (Grant No. R03HS29422)	PI; J. Schmidt (co-I, University of Georgia), R. Lynall (co-I, University of Georgia)	\$61,407/\$93,011	4/2023- 3/2025
Georgia Tech	COVID-19 Faculty Relief Program	PI	\$8,000	2/2023- 6/2023
I3 Emory SOM/ Georgia Tech In- novation Award	Designing a Data-driven and Risk-specific Approach to Ma- ternal Health Care (Grant No. UL1-TR002378)	PI; L. Steimle (PI, Georgia Tech), S. Boulet (site PI, Emory University School of Medicine), M. Platner (co-PI, Emory University)	\$34,950/\$100,000	1/2022- 12/2023

DOCUMENTATION OF TEACHING EFFECTIVENESS

Courses Taught & Student Evaluations

At the University of Washington

Course	Title	Quarter	Credits	Enroll	Resp	Item 1	Item 3	Item 4	Overall
IND E 311	Stochastic Models and Decision Analysis	Winter 2026	4						

At Georgia Tech

I taught three courses at Georgia Tech. The overall score reflects the interpolated median for the question:

Concerning everything, the instructor was an effective teacher.

Semester	Course	Title	Response	Overall
	Number		Rate	
Spring 2024	ISyE 3232	Stochastic Manufacturing & Service Systems	53/54	4.80
Spring 2024	ISyE 6320	Public Impact Applications of Operations Research and	17/18	4.88
	/HS 6400	Management Science		
Fall 2023	ISyE 8803	Special Topics: Prediction Modeling in Medical Deci-	5/5	5.00
		sion Making and Health Policy		
Spring 2023	IsyE 3232	Stochastic Manufacturing & Service Systems (T14)	59/63	4.89
Spring 2023	IsyE 3232	Stochastic Manufacturing & Service Systems (T15)	69/74	4.94
Spring 2022	IsyE 3232	Stochastic Manufacturing & Service Systems	57/62	4.99
Spring 2022	ISyE 8803	Special Topics: Prediction Modeling in Medical Deci-	12/15	4.89
		sion Making and Health Policy		

At the University of Michigan

I taught one course at the University of Michigan as the instructor on record. The overall score reflects the median for the question: *Overall, the instructor was an effective teacher*.

Semester	Course	Title	Response	Overall
	Number		Rate	
Winter 2018	IOE 316	Introduction to Markov Processes	100/112	4.71

Other Teaching Contributions

Guest Lectures

- Spring 2023, KAP 609: Concussion Pathology & Management at the University of Delaware
- Fall 2022, ISyE 6664: Stochastic Optimization at Georgia Tech

SERVICE

Departmental Service

- Co-chair, IISE Student Chapter Faculty Advisor, 2025
- Chair, Alpha Pi Mu Student Chapter Faculty Advisor, 2025
- Member, Curriculum Transformation Committee, 2025
- Member, Undergraduate Program Scholarship and Admissions Committee, 2025

Grant Review

National Science Foundation, SCH, 2022

Ad-hoc Journal Reviews

- Technical Journals in IE/OR:
 - European Journal of Operational Research
 - Healthcare Management Science
 - IISE Transactions
 - IISE Transactions on Health Systems
 - INFORMS Journal on Applied Analytics
 - INFORMS Journal on Computing
 - International Journal of Production Research
 - Management Science
 - Manufacturing & Service Operations Management
 - Medical Decision Making
 - Naval Research Logistics
 - Omega The International Journal of Management Science
 - Operations Research
 - Operations Research Letters
 - Production & Operations Management
- Medical and Health Policy Journals:
 - American Journal of Public Health
 - Applied Neuropsychology: Adult
 - BMJ Open Sport & Exercise Medicine
 - BMC Medical Research Methodology
 - International Journal of Sports Medicine
 - JAMA Network Open
 - Journal of Athletic Training
 - Neurosurgery
 - Scientific Reports
 - The Clinical Neuropsychologist

Society Leadership

- Councilor, INFORMS Health Applications Society 2024
- Vice President Co-chair of Communications, INFORMS Minority Issues Forum 2024

Awards Committees

- Judge, MSOM Student Paper Competition 2025
- Judge, POMS Best Healthcare Paper Award 2025
- Judge, INFORMS Poster Competition 2023
- Judge, INFORMS Health Applications Society Student Paper Competition 2023
- Judge, INFORMS Poster Competition 2021
- Judge, INFORMS Minority Issues Forum Best Paper Award committee 2021, 2025
- Member of INFORMS Seth Bonder Scholarship for Applied Operations Research in Health Services committee 2021-2023, 2025

Conference Organizing Activities

- IISE Annual Conference & Expo, 2022
- INFORMS Annual Meeting, 2017, 2020, 2023
- INFORMS Healthcare, 2019, 2021, 2023
- ISERC, 2016

Mentoring

- INFORMS Healthcare, Coffee Break Mentoring for PhD students, 2023
- INFORMS Annual Meeting, AMAZON SCOT Mentorship Program, 2021