

# Gian-Gabriel Garcia

Assistant Professor  
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## I. Earned Degrees

<b>University of Michigan</b> , Ann Arbor, MI	
PhD, Industrial and Operations Engineering	8/2020
MS, Industrial and Operations Engineering	12/2016
<b>University of Pittsburgh</b> , Pittsburgh, PA	
BS, Industrial Engineering, <i>Summa Cum Laude</i>	12/2014

## II. Employment History

<b>Georgia Institute of Technology</b> , Atlanta, GA	
H. Milton Stewart School of Industrial and Systems Engineering	
Assistant Professor	8/2021-Present
<b>Harvard Medical School</b> , Boston, MA	
Massachusetts General Hospital Institute for Technology Assessment	
Postdoctoral Fellow	7/2020-7/2021

## III. Honors and Awards

### A. International or National Awards

\* indicates an award given to mentored students for joint work

*SMDM Lee B. Lusted Prize in <i>Quantitative Methods &amp; Theoretical Developments</i>	2022
awarded to PhD student Che-Yi Liao	
*Finalist, SMDM Lee B. Lusted Prize in <i>Quantitative Methods &amp; Theoretical Developments</i>	2022
awarded to PhD student Sun Ju Lee	
Panel Fellow, NSF CMMI Game Changer Academies	2022
Best Paper, IISE Transactions Focus Issue on <i>Operations Engineering &amp; Analytics</i>	2021
SMDM Lee B. Lusted Prize in <i>Quantitative Methods &amp; Theoretical Developments</i>	2020
First Prize, INFORMS Minority Issues Forum Paper Competition	2020
SMDM Lee B. Lusted Prize in <i>Quantitative Methods &amp; Theoretical Developments</i>	2018
INFORMS Bonder Scholarship for Applied OR in Health Services	2018

INFORMS Minority Issues Forum Doctoral Colloquium Sponsorship	2018
First Prize, INFORMS Minority Issues Forum Poster Competition	2017
Finalist, INFORMS Bonder Scholarship for Applied OR in Health Services	2017
NSF Graduate Research Fellowship	2017-2020
Honorable Mention, Ford Foundation Fellowship Predoctoral Competition	2016, 2017

## B. Institute or School Awards

### Georgia Institute of Technology, Atlanta, GA

ISyE Diversity, Equity, and Inclusion Fellow	2022
Student Recognition of Excellence in Teaching: CIOS Honor Roll	Spring 2022
Thank a Teacher Certificate	Spring 2022

### University of Michigan, Ann Arbor, MI

Towner Prize for Distinguished Academic Achievement	2020
Departmental Nomination, Cornell ORIE Young Researchers Workshop	2019
IOE Graduate Student Instructor of the Semester	Winter 2017
Honorable Mention, IOE Bonder Scholar Fellowship	2016
Rackham Merit Fellowship	2015-2020

## IV. Research, Scholarship, and Creative Activities

\* indicates work conducted at Georgia Tech.

Student coauthors advised/mentored by Dr. Garcia at Georgia Tech appear in **bold**.

Student coauthors supervised/mentored by Dr. Garcia outside of Georgia Tech appear in *italics*.

## A. Published Books, Book Chapters and Edited Volumes

### A.1. Refereed Book Chapters

- [BC2] \***A. K. McNealey**, W. J. Marrero, L. N. Steimle, and G.-G. P. Garcia (2022). "Optimization Methods for Interpretable Treatment and Screening". In: *Encyclopedia of Optimization*. Third. Springer New York (Under review)
- [BC1] \***S. J. Lee**, **H. S. Pandey**, and G.-G. P. Garcia (2022). "Designing Interpretable Machine Learning Models Using Mixed Integer Programming". In: *Encyclopedia of Optimization*. Third. Springer New York (Under review)

## B. Academic Publications

### B.1. Published and Accepted Journal Articles

- [J19] \*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 CARE Consortium Investigators (2022). Temporal Network Architectures of Neurocognitive Functioning and Psychological Symptoms in Collegiate Athletes Following Sport-related Concussion: A CARE Consortium Investigation. *Journal of Neurotrauma* (Accepted)

- [J18] \*K. E. Valerio, J. B. Caccese, A. P. Kontos, T. A. Buckley, G.-G. P. Garcia, N. Port, S. P. Broglio, T. W. McAllister, M. A. McCrea, P. F. Pasquina, J. P. Hayes, and C. C. Investigators (2022). Primary and Secondary Risk Factors Associated with Concussion Symptom Clusters in Collegiate Athletes: Results from the NCAA-DoD Grand Alliance CARE Consortium. *The Orthopaedic Journal of Sports Medicine* (Accepted)
- [J17] \*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. *Clinical Journal of Sport Medicine* (Accepted)
- [J16] \*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 C. C. Investigators (2022). 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* (Accepted)
- [J15] \*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
  - Garcia and Dehghanpoor have equal contributions as authors
- [J14] \*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
- [J13] \*C.-Y. Liao, 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
- [J12] 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
- [J11] 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
- [J10] 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
- [J9] 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
- [J8] 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. *Neurosurgery* **87**(5), 971–981

- [J7] 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. *IIE Transactions* **52**(10), 1098–1121
  - Best Paper, 2021 IIE 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
- [J6] 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
- [J5] 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
- [J4] 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**, 111–119
- [J3] 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. *IIE Transactions* **51**(1), 74–91
- [J2] 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
- [J1] 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

## B.2. Refereed Conference Papers

- [CP1] \*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 Sports-related Concussion. *Proceedings of the 2022 Winter Simulation Conference* (Accepted)
  - Garcia and Czerniak have equal contributions as authors

### B.3. Other Refereed Material

#### Refereed Conference Abstracts

- [O17] \***C.-Y. Liao**, 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
- [O16] \***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
- [O15] \***S. J. Lee** 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
- [O14] \***C.-Y. Liao**, 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
- [O13] \*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
- [O12] \*G.-G. P. Garcia, N. Ghaffarzagdegan, 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
- [O11] \*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
- [O10] \*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
- [O9] \*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
- [O8] \*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

- [O7] \*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
- [O6] 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
- [O5] 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
- [O4] 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, QC
- [O3] 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
- [O2] 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
- [O1] 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

#### B.4. Submitted Journal Articles

- [R6] \*S. J. Lee, G.-G. P. Garcia, K. K. Stanhope, M. Platner, and S. L. Boulet (2022). Interpretable Machine Learning to Predict Adverse Perinatal Outcomes: Examining Marginal Predictive Value of Risk Factors throughout Pregnancy. (Submitted).
- [R5] \*S. Ma, A. Dehghanian, G.-G. P. Garcia, and N. Serban (2022). Learning Hidden Markov Models with Structured Dynamics. (Submitted).
- [R4] \*C.-Y. Liao, G.-G. P. Garcia, K. Paynabar, Z. Dong, Y. Xie, and M. S. Jalali (2022). Tides Need STEMMED: A Locally Operating Spatio-Temporal Mutually Exciting Point Process with Dynamic Network for Improving Opioid Overdose Death Prediction. (Submitted).
  - Winner, 2022 SMDM Lee B. Lusted Prize in *Quantitative Methods & Theoretical Developments*
  - Pre-print: <https://arxiv.org/abs/2211.07570>

- [R3] \*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 (2022). 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. (Submitted).
- [R2] \*G.-G. P. Garcia, M. S. Lavieri, T. W. McAllister, M. A. McCrea, and S. P. Broglio (2022). Reducing the Price of Naivete in Return-to-play from Sports-related Concussion. (Under revision).
  - Winner, 2020 SMDM Lee B. Lusted Prize in *Quantitative Methods & Theoretical Developments*
- [R1] \*G.-G. P. Garcia, L. N. Steimle, W. J. Marrero, and J. B. Sussman (2022). Interpretable Policies and the Price of Interpretability in Hypertension Treatment Planning. (Under revision)
  - Pre-print: <https://optimization-online.org/?p=17279>

## B.5. Articles in Preparation and Working Papers

- [P1] \*G.-G. P. Garcia, N. Ghaffarzadegan, and M. S. Jalali (2021). Analyzing "Optimal" Diagnosis Policies for Post-traumatic Stress Disorder in the Presence of Social Stigma. (Working Paper)

## C. Presentations

### C.1. Invited Conference and Workshop Presentations

- 17. \*S. J. Lee and G.-G. P. Garcia (2022). A Tolerance-based Approach to Lexicographic Multi-objective Partially Observed Markov Decision Processes. *INFORMS Annual Meeting*, Indianapolis, IN
- 16. \*C.-Y. Liao, G.-G. P. Garcia, K. Paynabar, and M. S. Jalali (2022). Improving Prediction of Opioid-involved Overdosed Deaths with Multivariate Spatio-temporal Hawkes Process. *INFORMS Annual Meeting*, Indianapolis, IN
- 15. \*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
- 14. \*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)
- 13. \*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

12. \*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
11. 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
10. 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
9. 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
8. 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
7. 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
6. 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
5. 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
4. 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
3. 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
2. 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
1. 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



## C.2. Conference and Workshop Presentations

3. \*C. G. Turner, A. Svirsko, G.-G. P. Garcia, and S. W. Liebel (2022). Trajectory Analysis of Concussion Symptoms. *INFORMS Annual Meeting*, Indianapolis, IN
2. \*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
1. 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

## C.3. Invited Seminar Presentations

6. \*Interpretable Policies and the Price of Interpretability in Hypertension Treatment Planning
  - Department of Industrial and Systems Engineering, Rochester Institute of Technology, Fall 2022
5. \*Optimizing Acute Concussion Assessment: Insights from Predictive Analytics
  - Advancing Concussion Care, Synaptex, May 2022
4. \*An Analysis of Structured Optimal Policies for Hypertension Treatment Planning: The Tradeoff Between Optimality and Interpretability
  - Center for Machine Learning, Georgia Tech, March 2022
  - Department of Industrial and Systems Engineering, Virginia Tech, November 2021
3. Predictive and Prescriptive Analytics for Concussion Management Decisions
  - MGH Institute for Technology Assessment, Harvard Medical School, August 2020
  - Department of Industrial and Systems Engineering, University of Minnesota, January 2020
  - Department of Industrial Engineering, Clemson University, January 2020
  - School of Industrial Engineering and Regenstrief Center for Healthcare Engineering, Purdue University, December 2019
  - H. Milton Stewart School of Industrial and Systems Engineering, Georgia Tech, December 2019
  - Department of Industrial and Systems Engineering, University of Florida, December 2019
2. Data-driven Decision Thresholds for Risk Estimation Models with Application to Acute Concussion Assessment
  - Edward P. Fitts Department of Industrial & Systems Engineering Department, North Carolina State University, April 2019

#### 1. Data-driven Optimization for Concussion Management Decisions

- Department of Industrial and Operations Engineering, University of Michigan, September 2018

#### C.4. Invited Conference and Workshop Panels

1. \*Finding Research Success in the Medical Community, INFORMS Annual Meeting, Indianapolis, IN, October 2022

#### C.5. Other Presentations

11. L. L. Czerniak, S. W. Liebel, G.-G. P. Garcia, M. S. Lavieri, M. A. McCrea, T. W. McAllister, and S. P. Broglio (2020). Sensitivity and Specificity of Computer-Based Neurocognitive Assessments in Sport-Related Concussion. *Traumatic Brain Injury Conference*, Washington D.C.
10. L. L. Czerniak, S. W. Liebel, G.-G. P. Garcia, M. S. Lavieri, M. A. McCrea, T. W. McAllister, and S. P. Broglio (2020). Characterizing the Accuracy of Computer-Based Neurocognitive Tests in Sport-Related Concussion. *INFORMS Annual Meeting Minority Issues Forum Poster Competition*, National Harbor, MD
9. G.-G. P. Garcia, J. Yang, M. S. Lavieri, T. W. McAllister, M. A. McCrea, and S. P. Broglio (2019). Optimization of the SAC, BESS, and SCAT Symptom Checklist for Acute Concussion Assessment. *Traumatic Brain Injury Conference*, Washington D.C.
8. G.-G. P. Garcia, M. S. Lavieri, C. M. Schumb, T. W. McAllister, M. A. McCrea, and S. P. Broglio (2018). Developing Insights For Hard-to-Diagnose Concussions Using Machine Learning. *INFORMS Annual Meeting Minority Issues Forum Poster Competition*, Phoenix, AZ
7. G.-G. P. Garcia, M. S. Lavieri, R. Jiang, M. McCrea, T. W. McAllister, S. P. Broglio, and CARE Consortium Investigators (2018). A Stochastic Programming Approach to Determine Decision Boundaries for Medical Diagnosis. *YinzOR Conference 3rd Place*, Carnegie Mellon University, Pittsburgh, PA
6. 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
5. G.-G. P. Garcia, M. S. Lavieri, R. Jiang, M. McCrea, T. W. McAllister, S. P. Broglio, and CARE Consortium Investigators (2017). A Stochastic Programming Approach to Determine Decision Boundaries for Medical Diagnosis. *Center for Healthcare Engineering and Patient Safety Symposium*, University of Michigan, Ann Arbor, MI
4. G.-G. P. Garcia, M. S. Lavieri, R. Jiang, M. McCrea, T. W. McAllister, S. P. Broglio, and CARE Consortium Investigators (2017). A Stochastic Programming Approach to Determine Decision Boundaries for Medical Diagnosis. *Engineering Graduate Symposium 2nd Place*(Session IOF-2), University of Michigan, Ann Arbor, MI

3. G.-G. P. Garcia, M. S. Lavieri, R. Jiang, M. Mccrea, T. W. McAllister, S. P. Broglio, and CARE Consortium Investigators (2017). A Stochastic Programming Approach to Determine Decision Boundaries for Medical Diagnosis. *INFORMS Annual Meeting Minority Issues Forum Poster Competition 1st Place*, Houston, TX
2. G.-G. P. Garcia, M. S. Lavieri, and S. P. Broglio (2016). Optimal Return-to-Play From Concussion. *Center for Healthcare Engineering and Patient Safety Symposium*, University of Michigan, Ann Arbor, MI
1. G.-G. P. Garcia, M. S. Lavieri, and S. P. Broglio (2016). Optimal Return-to-Play From Concussion. *Engineering Graduate Symposium*, University of Michigan, Ann Arbor, MI

## D. Grants and Contracts

### D.1. As Principal Investigator

1. **Designing a Data-driven and Risk-specific Approach to Maternal Health Care**  
 Sponsor: I3 Emory SOM/Georgia Tech Innovation Award  
 Total Dollar Amount: \$100,000  
 Role: PI  
 Collaborators: Lauren Steimle (PI, Georgia Tech), Sheree Boulet (PI, Emory University School of Medicine), Marissa Platner (co-PI, Emory University)  
 Candidate's Share: 35% (\$34,950)  
 Period of Contract: January 2022 - December 2022

## V. Teaching

### A. Courses Taught

Semester	Course Number	Course Title	Response Rate	Overall Rating*
Fall 2022	IsyE 6664	Stochastic Optimization (Guest Lecture)		
Spring 2022	IsyE 3232	Stochastic Manufacturing and Service Systems	57/62	4.9
Spring 2022	ISyE 8803	Special Topics: Prediction Modeling in Medical Decision Making and Health Policy	12/15	4.8
Winter 2018	IOE 316**	Introduction to Markov Processes	100/112	4.71

\*For courses taught at Georgia Tech, overall score reflects interpolated median for the question: Concerning everything, the instructor was an effective teacher. For courses taught at the University of Michigan, the overall score reflects the median for the question: Overall, the instructor was an effective teacher.

\*\*Denotes a course taught at the University of Michigan as the instructor of record.

### B. Individual Student Guidance

#### B.1. Ph.D. Students

##### B.1.a. In Process Ph.D. Students

5. Amaya McNealey (co-advised with Lauren Steimle)  
Advising Start Date: Fall 2022
4. Himadri Pandey  
Advising Start Date: Fall 2022
3. Kelsey Custodio (co-advised with Juba Ziani)  
Advising Start Date: Fall 2021
2. Che-Yi Liao (co-advised with Kamran Paynabar)  
Advising Start Date: Fall 2021  
Awarded SMDM Lee B. Lusted Prize in *Quantitative Methods and Theoretical Developments*, 2022  
Awarded ISyE George Family Fellowship, 2022
1. Sun Ju Lee  
Advising Start Date: Fall 2020  
Passed OR Comprehensive Exam in: 2021  
Finalist, SMDM Lee B. Lusted Prize in *Quantitative Methods and Theoretical Developments*, 2022

## **B.2. Mentorship of Postdoctoral Fellows or Visiting Scholars**

2. Caleb X. Bugg  
*Jerry and Harriet Thuesen Postdoctoral Fellow*  
Starting August 2022
1. Behshad Lahijanlian (co-advised with Nicoleta Serban)  
*Tennenbaum Postdoctoral Fellow*  
Starting August 2022

# **VI. Service**

## **A. Professional Contributions**

### **A.1. Society Officers, Activities, and Membership**

- Award Committees:
  1. Member of INFORMS Minority Issues Forum Best Paper Award committee 2021
  2. Member of INFORMS Seth Bonder Scholarship for Applied Operations Research in Health Services committee 2021
- Membership:
  3. INFORMS: Institute for Operations Research and Management Science

- 2. SMDM: Society for Medical Decision Making
- 1. IISE: Institute of Industrial and Systems Engineering
- Conference Session Chair:
  - 4. IISE Annual Conference & Expo, 2022
  - 3. INFORMS Annual Meeting, 2017, 2020
  - 2. INFORMS Healthcare, 2019, 2021
  - 1. ISERC, 2016
- Mentoring:
  - 1. INFORMS Annual Meeting AMAZON SCOT Mentorship Program, 2021

#### **A.2. Technical Journal or Conference Referee Activities**

- Technical Journal Referee:
  - 11. European Journal of Operational Research
  - 10. Healthcare Management Science
  - 9. IISE Transactions
  - 8. INFORMS Journal on Computing
  - 7. Management Science
  - 6. Manufacturing & Service Operations Management
  - 5. Medical Decision Making
  - 4. Naval Research Logistics
  - 3. Omega - The International Journal of Management Science
  - 2. Operations Research
  - 1. Production & Operations Management
- Medical and Health Policy Journal Referee:
  - 9. American Journal of Public Health
  - 8. Applied Neuropsychology: Adult
  - 7. BMJ Open Sport & Exercise Medicine
  - 6. BMC Medical Research Methodology
  - 5. International Journal of Sports Medicine
  - 4. JAMA Network Open
  - 3. Journal of Athletic Training
  - 2. Neurosurgery
  - 1. The Clinical Neuropsychologist
- Conference Referee:
  - 2. INFORMS 18th Workshop on Data Mining
  - 1. Society for Medical Decision Making Annual Meeting 2022

### **A.3. Proposal Panels and Reviews**

- National Science Foundation, 2022

## **B. Public and Community Service**

### **B.1. Broadening Participation in Engineering**

- INFORMS DEI Ambassador Program, *To Future Medical Failures: The Extent of Racial and Gender Bias and Research*, 2023 (with Behshad Lahijanian and Nicoleta Serban)
- Panelist for Engineering, Data Science, and Coding Seth Bonder Youth Summer Camp by Kids Teach Tech, July 2022
- Invited Guest Speaker, “Mentorship for Every Season: Receiving, Giving, and Finding Mentorship throughout Your Career”, BINDx (Black Industrial Engineers), University of Michigan, January 2022
- Student Liaison and Alumni Recruitment Chair, Pitt EXCEL Alumni Council, University of Pittsburgh, 2020-2022
- Keynote Speaker, Pitt EXCEL Homecoming Event, University of Pittsburgh, October 2020