

## **Jacob M. Aguirre**

Operations Research Ph.D. Student  
H. Milton Stewart School of Industrial and Systems Engineering  
Georgia Institute of Technology

### **I. Earned Degrees**

- Georgia Institute of Technology  
(2023– Present) Doctor of Philosophy, Operations Research  
(2024– Present) Master of Science, Quantitative and Computational Finance  
(2022–2024) Master of Science, Mathematics  
(2022–2023) Master of Science, Economics  
(2020–2022) Bachelor of Science, Economics, Mathematics
- Advisors: Dr. Anton J. Kleywegt

### **II. Employment History**

- (Summer 2024) Graduate Teaching Fellow, Georgia Institute of Technology
- (Summer 2023) Research Fellow, Oak Ridge National Laboratory
- (Spring 2023) Graduate Research Assistant, Georgia Institute of Technology
- (2020-2022) Undergraduate Teaching Assistant, Georgia Institute of Technology
- (2020-2022) Undergraduate Research Assistant, Georgia Institute of Technology

### **III. Honors and Awards**

- (January 2024) H. Milton Stewart Fellowship
- (August 2023) Ernst & Young Fellowship
- (March 2023) NSF Graduate Research Fellowship
- (March 2023) DOE Computational Science Fellowship (Declined, Accepted NSF)
- (February 2023) Stewart ISyE Fellowship
- (February 2023) ISyE Travel Fund Fellowship
- (January 2023) GEM Foundation PhD Fellowship
- (Summer 2022) NSF SURE Research Fellow
- (Summer 2022) Georgia Tech Undergrad Presidential Research Scholar ( $\times 2$ )
- (May 2022) Georgia Tech SOE Outstanding Undergraduate Researcher
- (May 2022) Georgia Tech OMED Tower Award
- (August 2021) Coca-Cola Engineering Scholarship
- (2020–2022) Zell Miller (Full tuition) Scholarship

## IV. Research, Scholarship, and Creative Activities

### A. Refereed Publications and Submitted Articles

#### A1. Published and Accepted Journal Articles

- [J1] **Aguirre, J.**, Blecker, A., Urmanbetova, A., Kower, P., (2023). “Discovering Careers and Diversity in Economics Through Inter-Institutional Student Club Collaborative”. *The American Economist*.

#### A2. Conference Presentation with Proceedings (Refereed)

- [P3] **Aguirre, J.** (April 2024). “Some topological results on convex polytopes and their subdivisions”.
- [P2] **Aguirre, J.**, Blecker, A., Urmanbetova, A., Kower, P., (2023). “Discovering Careers and Diversity in Economics Through Inter-Institutional Student Club Collaborative”. *American Economics Association Annual Meeting*. New Orleans, Louisiana.
- [P1] Dench, D., **Aguirre, J.**, (2023). “The Effects of EVALI Crisis on Youth and Adult Use of e-Cigarettes”. American Society of Health Economists Annual Meeting. St. Louis, Missouri.

### B. Grants and Contracts

#### B1. As Principal Investigator

- Title of Project: Accelerated Inexact First-Order Methods for Large Scale Convex Programming  
Agency/Company: NSF ACCESS Program  
Total Dollar Amount: \$85,000 USD  
Role: Principal-Investigator  
Collaborators: Jacob M. Aguirre (PI), Anton J. Kleywegt (co-PI)  
Period of Contract: 06/01/2024 – 05/31/2025  
Candidate's Share: 100% (\$85K)

#### B2. Other Refereed Material

- [O2] **Aguirre, J.**, Ma, R., Patel, S., (2022). *A Review of High Dimensional Nonlinear Reduction Techniques*. Georgia Institute of Technology.
- [O1] **Aguirre, J.** (2021). “The Effects of EVALI Crisis on Youth and Adult Use of e-Cigarettes”. Undergraduate Thesis. Georgia Institute of Technology.

#### B3. Submitted (or soon to be) Journal Articles (with Date of Submission)

- [U2] **Aguirre, J.**, Monteiro, R., Kleywegt, A., (January 2024). “A low-rank augmented Lagrangian method for large-scale sparse linear programs based on a hybrid approach”. Work-in-Progress.
- [U1] Liu, X., **Aguirre, J.**, Liu, X., (2023). “Optimal Compressed Sensing Dynamic Mode Decomposition for In-Situ Large-scale Dataset”. Invited by first author to contribute for revisions at IISE transactions.

## C. Software

- [S2] **Aguirre, J.**, Kleywegt, A., (2024). *ConstrainedPrefOpt - An algorithm for large constrained assortment optimization problems*. Supported in C++.
- [S1] **Aguirre, J.**, Monteiro, R. D., Kleywegt, A. J., (2024). *SparseLP - an efficient primal-dual hybrid algorithm for solving large-scale linear programs that exhibit structured sparsity*. Julia Package (publishing August 2024).

## D. Presentations

### D1. Invited talks

- [I8] “Accelerated Inexact High-Order Proximal Point Methods for Convex Tensor Optimization” (February 2024). *H. Milton Stewart School of Industrial Systems and Engineering, Georgia Institute of Technology*.
- [I7] “A Stochastic Control Framework for Controlled Learning on the Fly” (July 2023). *Oak Ridge National Laboratory, Computing and Computational Sciences Directorate*.
- [I6] The Ohio State University, *An Inverse Markov Decision Process Approach to Optimal Smoking Cessation Treatment*, (April 2023).
- [I5] Georgia Institute of Technology, Economics seminar, (2022). “How the EVALI crisis affected e-cig and cigarette use and perceptions: evidence from PATH”.
- [I4] Georgia Institute of Technology, Health Policy seminar, *How the EVALI crisis affected e-cig and cigarette use and perceptions: evidence from PATH*, (2022).
- [I3] “How the EVALI crisis affected e-cig and cigarette use and perceptions: evidence from PATH” (2022). *Southern Economics Association Annual Meeting*.
- [I2] The Ohio State University, Economics workshop, (September 2022). “How the EVALI crisis affected e-cig and cigarette use and perceptions: evidence from PATH”.
- [I1] University of Virginia, *How the EVALI crisis affected e-cig and cigarette use and perceptions: evidence from PATH*, (April 2022).

### D2. Conference presentations

- [T6] **Aguirre, J.**, Blecker, A., Urmanbetova, A., Kower, P., (2023). “Discovering Careers and Diversity in Economics Through Inter-Institutional Student Club Collaborative”. *American Economics Association Annual Meeting*.
- [T5] **Aguirre, J.**, Garcia, G., Dench, D., (2023). “An Inverse Markov Decision Process Approach for Optimal Smoking Cessation”. *INFORMS Annual Meeting*. Phoenix, Arizona.
- [T4] Czerniak, L., **Aguirre, J.**, Sabogal, M., Cartes, S., (2023). “Minority Issues Forum PhD Panel”. *INFORMS Annual Meeting*. Phoenix, Arizona.
- [T3] Dench, D., **Aguirre, J.**, (2023). “The Effects of EVALI Crisis on Youth and Adult Use of e-Cigarettes”. *American Society of Health Economists 2023 Conference*.
- [T2] **Aguirre, J.**, Blecker, A., Urmanbetova, A., Kower, P., (December 2022). “Discovering Careers and Diversity in Economics Through Inter-Institutional Student Club Collaborative”. *Southern Economics Association Annual Meeting*.
- [T1] **Aguirre, J.**, Ma, R., Patel, S., (2022). “A Review of High Dimensional Nonlinear Reduction Techniques”. *Undergraduate Math Research Conference at Georgia Tech*.

## E. Societal and Policy Impacts

1. Reviewer for Georgia Governors Honors Program (GHP) Mathematics
2. Instructor (Mathematics) for Georgia Governors Honors Program (GHP) (Summer 2022)

## F. Other Professional Activities

1. Standing Committee member for Presidential Undergraduate Research Awards (PURA) at Georgia Tech (2023-2024)
2. Test writer for Georgia Tech ISyE high school statistics competition (2024)

## V. Education

### A. Courses Taught or Assisted

Semester	Number	Course Title	# Students
Summer 2024	ISYE 3133	Engineering Optimization	54
Semester	Number	Course Title	# Students
Fall 2022	ECON 8801	Grad. Behavioral Economics	17
Semester	Number	Course Title	# Students
Fall 2022	ECON 4803	Behavioral Economics	35
Semester	Number	Course Title	# Students
Summer 2022	ECON 2105	Intro to Macroeconomics	30
Semester	Number	Course Title	# Students
Spring 2022	ECON 2105	Intro to Macroeconomics	78
Semester	Number	Course Title	# Students
Spring 2022	ECON 2101	The Global Economy	76

Note: Occasionally taught lectures, prepared all course and project materials, and did all grading for both ECON 4803 & 8801.

### B. Individual Student Guidance

#### B1. Undergraduate Students

*Students advised as part of Undergraduate Research Ambassador Program*

- Xingyu Gong (ISyE), (Summer 2022 – Fall 2023)
- Kun-Lin Hsieh (Math), Spring 2022
- Maggie Xia (Math), Spring 2022
- Dhairya Patel (Biology), Spring 2022
- Xinyu Chen (ISyE), Spring 2022
- Carson Cole (Economics + Mathematics), Fall 2021 & Spring 2022
- Eric Chen (Economics), Fall 2021

## **VI. Service**

### **A. Professional Contributions**

#### **A1. Appointments and Memberships**

- (2022 – Present) Institute for Operations Research and Management Sciences (INFORMS)
  1. Mathematical Optimization Society (MOS)
  2. Revenue Management & Pricing Section
  3. Transportation Society and Logistics (TSL)
  4. Minority Issues Forum (MIF)
  5. Manufacturing and Service Operations Management Society (MSOM)
- (2021 – Present) Institute of Industrial and Systems Engineers (IISE)
- (2020 – Present) Society of Industrial and Applied Mathematics (SIAM)
- (2020 – 2023) American Economics Association (AEA)
- (2020 – 2023) American Society of Health Economists (ASHEcon)

#### **A2. Referee**

No data.