

Temitayo Ajayi

6100 Main MS-134, Houston, TX 77005

📞 907-306-2650 • ✉️ temitayo.ajayi@rice.edu
🌐 www.caam.rice.edu/~ta21/

Research Interests: Treatment optimization, Healthcare equity, conic mixed-integer programming theory, feature selection

Academic

- **Rice University** **Houston, TX**
 - *PhD Candidate in Computational and Applied Mathematics* August 2015–May 2020 (Expected)
 - [Dissertation] *Integer Programming Approaches to Cancer Treatment*
 - Advisor: Dr. Andrew Schaefer
- **University of Texas MD Anderson Cancer Center** **Houston, TX**
 - *Visiting Graduate Student in the Department of Radiation Oncology* February 2019–Current
- **Rice University** **Houston, TX**
 - *Master of Arts in Computational and Applied Mathematics* May 2018
 - [Masters Thesis] *Assessing the Tightness of Linear Programming Relaxations: The Parametrized Gap Problem*
- **Yale University** **New Haven, CT**
 - *Bachelor of Science in Applied Mathematics* August 2011–May 2015

Publications

- Ajayi, T., Thomas, C.², and Schaefer, A. J. "The Gap Function: Evaluating Integer Programming Models over Multiple Right-hand Sides," (To appear in *Operations Research*). http://www.optimization-online.org/DB_FILE/2018/10/6893.pdf
- Ng, S., Ajayi, T. et al. "Surveillance Imaging for Patients with Head and Neck Cancer Treated with Definitive Radiotherapy: A Partially Observed Markov Decision Process Model," (To appear in *Cancer*¹).
- Ng, S., Pollard, C. III et al. "Usefulness of Surveillance Imaging in Patients with Head and Neck Cancer Who are Treated with Definitive Radiotherapy," *Cancer*, 125: 1823-1829. doi:10.1002/cncr.31983.

Papers Under Review

- Ajayi, T., Lee, T., and Schaefer A. J. "Optimal Objective Selection Using Inverse Optimization," (Submitted to *Operations Research*). http://www.optimization-online.org/DB_FILE/2019/09/7393.pdf

² Mentored the undergraduate student in research

¹ Impact Factor: 6.072

- Ajayi, T., Lee, T., and Schaefer, A. J. "Why Greed is Often Good: Approximate and Local Submodularity," (Submitted to *INFORMS Journal on Computing*). <https://arxiv.org/pdf/1901.09209v2.pdf>
- Ajayi, T., Suriyanarayana, V.², and Schaefer, A. J. "Theorems of the Alternative for Conic Integer Programming," (Under 2nd review at *Operations Research Letters*). <https://arxiv.org/pdf/1906.00144.pdf>

Working Papers

- Zhang, W.², Brown, S., Ajayi, T., and Schaefer, A. J. "Primal Construction of Integer Programming Value Functions".
- Ajayi, T., Gupte, A., Khademi, A., and Schaefer, A. J. "Strong duals and extended formulations for conic mixed-integer programming".
- Ajayi, T., Mildebrath, D., Kyriallidis, A., Ubaru, S., Kollias, G., and Bouchard, K. "Provably Convergent Acceleration in Factored Gradient Descent with Applications in Matrix Sensing". <https://arxiv.org/pdf/1806.00534.pdf>

Fellowships/Honors

- Rice University Graduate Teaching Award for Course Support (2019)
- INFORMS Doctoral Colloquium Travel Award (2019)
- MIP Workshop Poster Competition Finalist and Travel Award (2019)
- INFORMS Health Applications Society Bonder Scholarship Finalist (2018)
- Alan Weiser Memorial Travel Award (2018)
- NSF GRFP Honorable Mention (2016)
- ASME Innovation Showcase Finalist (2016)
- Ken Kennedy Institute Computer Science and Engineering Fellowship (2015)
- RGEM Recruitment Fellowship (2015)
- Yale CEID Summer Fellowship (2015)
- Sidney Wood Cup (2015)

Invited Talks

- SCOOP: Superadditive Cone-Ordered Optimization Problems–Rice Computational and Applied Mathematics (CAAM) Graduate Seminar 2019
- The Gap Function: Evaluating Integer Programming Models over Multiple Right-hand Sides–2019 INFORMS Annual Meetings
- Objective Selection for Cancer Treatment: An Inverse Optimization Approach–2019 INFORMS Annual Meetings
- (Poster) Objective Selection for Prostate Cancer Treatment: A Generalized Inverse Optimization Approach–2019 INFORMS MIF Poster Session
- (Poster) Conic Mixed-integer Programming Duals and Extended Formulations–2019 MIP Workshop
- Data-driven Objective Selection in Multi-objective Optimization–2019 INFORMS Healthcare
- Inverse Optimization and Heuristics–Rice Computational and Applied Mathematics (CAAM) Graduate Seminar 2019
- A Partially Observed Markov Decision Process Model for Head and Neck Cancer Surveillance–2019

AHNS Annual Meeting

- Best Objective Selection in Radiation Therapy–2018 CAAM Prospective Student Luncheon
- Assessing Parametrized Linear Programming Relaxations with Superadditive Duality–ISMP 2018
- A Linear Programming Approach to PDEs–Rice CAAM Graduate Seminar 2018
- Assessing the Tightness of Linear Programming Relaxations: The Parametrized Gap Problem–Rice CAAM Graduate Seminar 2017, 2018
- Objective Selection in Cancer Treatment Using Inverse Optimization–2017 INFORMS Computing Society Conference
- Data-driven Objective Selection in Multi-objective Optimization–2017 INFORMS Annual Meetings
- Data-driven Objective Selection In Multi-objective Optimization: Inverse Optimization Approach–2016 INFORMS Annual Meeting
- The Node: Data Monitor for the Developing World–2016 ASME IShow

Professional Activities

○ Teaching

- Teaching Assistant
 - Introduction to Engineering Computation (Fall 2018, Spring 2019): Provided office hours for students.
 - Introduction to Operations Research and Optimization (Fall 2017): Designed assignments for students, hosted recitations and met individually with students, answered questions via email.
- Guest Lecturer
 - Introduction to Graph Theory (Spring 2018)
 - Introduction to Operations Research and Optimization (Fall 2015)

○ Research Mentorship:

- Zhi Liu, Tsinghua University undergraduate: Partial differential equation collocation methods (Summer 2019)
- Wenxin Zhang, Tsinghua University undergraduate: Level set integer programming approaches (Summer 2019)
- Varun Suriyanarayana, Rice University undergraduate: Conic integer programming (Spring 2018-Spring 2019)
- Marco Bornstein and Rangan Mostafa, Rice University undergraduates: Combinatorial optimization models for NFL survivor pools (Fall 2017)
- Chris Thomas, Rice University undergraduate: Superadditivity and gap functions (Fall 2016)

○ Grants:

- I helped draft and edit NSF grant CMMI-1826323: Performance Incentives for Transplant Centers
- I developed initial models, drafted, and edited NSF grant CMMI-1933373: Stochastic and Dynamic Chemotherapy Planning and Dosing

○ Rice Graduate Education for Minorities (RGEM)

- Represented Rice University and volunteered at the Tapia Conference on Diversity in Computing (2016)
- Attended RGEM meetings and participated in the faculty mentorship program

○ Department/Academic Service:

- Session Chair INFORMS Healthcare (2019)

- CAAM Graduate Seminar Chair (2018-19)
- Session Chair ISMP (2018)
- Department Prospective Student Visit Coordinator (2018)
- Rice University Graduate Student Association Department Representative (2015-2016)
- Rice University Student Health Insurance Committee (2015-present)
- o **Memberships:**
 - Institute for Operations Research and the Management Sciences (INFORMS)
 - Society for Industrial and Applied Mathematics (SIAM)

Additional Experience

- | | |
|--|--|
| <ul style="list-style-type: none"> o The Node Project o <i>Co-founder</i> o Yale University o <i>Science and Engineering Ambassador</i> o Southern California Gas Company o <i>Intern</i> o Institute of Social and Economic Research o <i>Research Technician</i> | <p style="text-align: right;">New Haven, CT
<i>June 2015 - June 2016</i></p> <p style="text-align: right;">New Haven, CT
<i>2014 - 2015</i></p> <p style="text-align: right;">Los Angeles, CA
<i>June 2014 - August 2014</i></p> <p style="text-align: right;">Anchorage, AK
<i>May - August 2012/2013</i></p> |
|--|--|

Technical Skills

- o **Programming Languages:** Proficient in: Python, Julia, R, Matlab, TeX, Arduino
- o **Other Software/Toolkits:** Gurobi, SolidWorks, CamBam, PETSc

References

- o Andrew Schaefer, PhD (PhD Advisor): Noah Harding Chair and Professor of Computational and Applied Mathematics, Rice University [andrew.schaefer@rice.edu]
- o Clifton David Fuller, MD, PhD: Associate Professor, Department of Radiation Oncology, Division of Radiation Oncology, The University of Texas MD Anderson Cancer Center [cdfuller@mdanderson.org]
- o Illya Hicks, PhD: Professor of Computational and Applied Mathematics, Rice University [ivhicks@rice.edu]
- o Taewoo Lee, PhD: Assistant Professor of Industrial Engineering, University of Houston [tlee6@uh.edu]

Last updated: 12-4-19