

# Michael Khalfin

## EDUCATION

### B.S. Operations Research, B.A. Mathematics

Rice University

Aug 2022 – May 2026

Houston, TX GPA: 3.72/4.00

**Coursework:** Linear & Integer Programming, Combinatorial Optimization, Large-Scale Optimization, Game Theory, Algorithms, Honors Calculus III/IV, Honors Linear Algebra, Real Analysis

### Study Abroad

Budapest Semesters in Mathematics

Jan 2024 – May 2024

Budapest, Hungary GPA: 3.85/4.00

**Coursework:** Graph Theory, Advanced Combinatorics, Theory of Computation, Mathematical Logic

## RESEARCH INTERESTS

Mathematical programming, online algorithms, and optimization under uncertainty

## RESEARCH EXPERIENCE

### Undergraduate Researcher

Rice University

Sep 2024 – Present

Houston, TX PI: Dr. Sebastian Perez-Salazar

- Analyzed single-reference algorithms for k-secretary problem, deriving closed-form competitive ratios for i.i.d. settings and simplifying existing proofs for adversarial settings.

### NSF Research Experience for Undergraduates

Michigan State University

Southfield, MI PIs: Dr. Chan-Jin Chung & Dr. Joshua Siegel

May 2023 – Jul 2023

- Developed deep learning algorithms for autonomous electric vehicles using TensorFlow and OpenCV.
- Designed Internet of Things architecture connecting Linux computers to Raspberry Pi with MariaDB database for hazard data sharing.

## PUBLICATIONS

### In Preparation

Khalfin, M., & Perez-Salazar, S. (in preparation). Competitive ratio analysis for the IID k-secretary problem. Manuscript in preparation.

### Published

Khalfin, M., Volgren, J., LeGoullon, L., Franz, B., Shah, S., Forgach, T., Jones, M., Jostes, M., Kaddis, R., Siegel, J., & Chung, C.-J. (2023). Vehicle-to-Everything Communication Using a Roadside Unit for Over-the-Horizon Object Awareness. *Proceedings of the IEOM International Conference on Smart Mobility and Vehicle Electrification*, Detroit, Michigan, USA, October 10-12, 2023. IEOM Society International. **(Oral presentation; Winner, Smart Mobility Competition.)**

Sbaiti, B., Khalfin, M., & Bezaire, M. (2021). A Computational Model of the Trans-Synaptic Spread of Pathogenic Tau in Early Alzheimer's Disease. *IMPULSE - The Premier Undergraduate Neuroscience Journal*. Published January 31, 2021.

## TEACHING EXPERIENCE

**TA, MATH 355: Linear Algebra, Fall 2024** Led three one-hour recitation sessions per week.

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## INDUSTRY EXPERIENCE

### Operations Research Intern

*Sandia National Laboratories*

**May 2025 – Present**

*Albuquerque, NM*

- Formulated mathematical programs to infer system states from fragmented data and quantify parameter uncertainty.
- Implemented and benchmarked decomposition algorithms (e.g., Logical Benders, progressive hedging) in Pyomo/Gurobi.

### Supply Chain Intern

*National Renewable Energy Laboratory*

**Sep 2024 – Present**

*Remote*

- Maintained database of 1,000+ North American companies in lithium-ion battery supply chain.

### Area Manager Intern

*Amazon*

**Jun 2024 – Aug 2024**

*Oklahoma City, OK*

- Led Lean Six Sigma initiatives at a fulfillment center, spearheading a \$5k buffer storage project that delivered over \$300k in annual savings resulting (60x ROI).
- Built 1.6M sq. ft. Excel/VBA-based travel optimization map and real-time inventory tracking system, improving stock accuracy by 15% and reducing associate travel time by 8%.

## HONORS AND AWARDS

**CMOR-Michael Ross Franco Award** for exemplary CAAM/OPRE majors, Rice University (2025)

**President's Honor Roll**, Rice University (2025)

**Elizabeth D. Williams Scholarship**, Budapest Semesters in Mathematics (2024)

**National Merit Scholarship Finalist** (2022)

## TECHNICAL SKILLS

**Programming:** Python, C++, Java, MATLAB, Lean, Rocq

**Optimization & ML:** Pyomo, Gurobi, NetworkX, TensorFlow, PyTorch

**Languages:** English (Native), Russian (Fluent), Spanish (Conversational)