Igor Lucindo Cardoso

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Lubbock, TX

Objective

PhD student eager to contribute to advancements in Operations Research, with a focus on large-scale optimization. Interested in integrating expertise in engineering and mathematical modeling to tackle complex real-world problems.

Education

2025 - Present Ph.D. in Industrial Engineering, **Texas Tech University (TTU)**
- Research interests: Optimization, Mixed-Integer Programming (MIP), Graph Theory. GPA: 4.00/4.00

2023 - 2024 M.A. Courses in Mathematical Modeling, **Getulio Vargas Foundation (FGV)**
- Relevant coursework: Measure Theory, Probability Theory

2020 - 2024 B.S. in Electronic Engineering, **Military Institute of Engineering (IME)**
- IME is the oldest and one of the best ranked engineering schools in Brazil. GPA: 8.25/10.00

Publications

Cardoso, Igor, Teodoro, Gabriel, and Validi, Hamidreza. **A Polytime and Interpretable Approach for Solving Wordle**. Submitted to *Operations Research*, 2026.

Gutierrez, Rogelio, **Cardoso, Igor**, and Validi, Hamidreza. **Sport Scheduling to Minimize Travels at the FIFA World Cup 2026**. Submitted to *Optimization Letters*, 2026.

Cardoso, Igor, Gomes, Carlos, Rosa, Paulo F.F. and da Fonseca, Vinicius Prado (2024). **Comparing Pre-Trained Object Detection Models for Autonomous Grasp on Affordable Prosthetic Hands**. In: *MeMeA 2024 - IEEE Medical Measurements & Applications*.

Manuscripts in Progress

Cardoso, Igor and Validi, Hamidreza. **On Solving the Network-Based Portfolio Optimization Problems**. *Manuscript in preparation*, 2026.

Research Experience

Research Assistant, Texas Tech University (TTU) 2025 – Present
- Conducting doctoral research in Operations Research, focusing on optimization, Mixed-Integer Programming (MIP), and graph theory, with ongoing work aimed at publication in prestigious optimization journals.
- Advisor: Dr. Hamidreza Validi.

Research Experience for Undergraduates at Memorial University of Newfoundland (MUN) 2023
- Exchange Program, BioInspired Robotics Lab. Contributed to machine learning, computer vision, and robotics, focusing on system optimization and autonomy. Developed prosthetic hand with autonomous grasping.
- Project Advisor: Dr. Vinicius P. da Fonseca.

Honors & Awards

- TTU Tye Industrial Endowment Engineering Scholarship, Texas Tech University 2026
- Student Chapter Annual Award (Cum Laude), INFORMS 2025
- 1st place in "The Road to 2050" competition, Shell Eco-marathon Team 2021
- 5th place in Petrobras Challenge, Latin American Robotics Competition, RoboIME 2021
- Gold and Silver Medals, Brazilian Mathematical Olympiad of Public Schools (OBMEP) 2018 – 2019

Extracurricular Experience

INFORMS Student Chapter, Texas Tech University 2025 – Present
- Active member engaging with the research community in Operations Research.
- Attended seminars and collaborated with peers to strengthen knowledge in optimization and Operations Research.

Journal Club, Texas Tech University 2025 – Present

- Presenter in Journal Club sessions, discussing and analyzing peer-reviewed research in Operations Research.

American Airlines Scheduling Project 2025

- Developed mixed-integer programming models to optimize aircraft scheduling for American Airlines.

Shell Eco-marathon Team 2021 – 2023

- Participated as a team member in the Shell Eco-marathon, focusing on sustainable engineering solutions.

Robotics Club - RoboIME 2021 – 2023

- Active member of the Robotics Club at Military Institute of Engineering.
- Contributed to projects involving machine learning and computer vision.

Software & Projects

Wordle Optimization Solver 2025

- Implemented a **GPU-accelerated** decision tree algorithm to solve Wordle with an efficient average of 3.421 guesses.
- *Tech Stack:* Python, CUDA, Decision Trees. [View App]

FIFA World Cup 2026 Scheduler 2025

- Developed an interactive web app using **Mixed-Integer Programming (MIP)** to optimize tournament schedules, minimizing team travel distance while enforcing stadium availability constraints.
- *Tech Stack:* Python, JavaScript, Optimization Solvers. [View App]

Expense Splitter 2025

- Built a tool utilizing optimization models to minimize the number of transactions required to settle shared expenses.
- *Tech Stack:* Python, Linear Programming. [View App]

Skills

Programming	Python, C/C++, Matlab, Julia, Java, JavaScript, HTML, CSS, FPGA
Tools	Gurobi, Cuda/GPU, Git, LaTeX, Linux, NetworkX, ROS, OpenCV, Arduino, Cloud Firestore
Languages	Portuguese (native), English (fluent), French (intermediate)
Relevant Courses	Network Optimization, Measure Theory, Probability Theory, Machine Learning, Algorithms, Computer Vision, Computer Architecture.

References

Dr. Hamidreza Validi (advisor) - hvalidi@ttu.edu

Dr. Burak Eksioglu (professor) - burak.eksioglu@ttu.edu

Dr. Ningji Wei (professor) - ningji.wei@ttu.edu

Dr. Vinicius P. da Fonseca (advisor) - vpradodafons@mun.ca