

Igor Lucindo Cardoso

Igor.Cardoso@ttu.edu |  igorcardoso |  igorlucindo

PROFESSIONAL SUMMARY

- PhD student specializing in Operations Research, Mixed-Integer Programming (MIP), and Graph Theory.
- Published author with research focused on GPU-accelerated optimization and decision tree algorithms.
- Experienced in developing full-stack optimization tools using Python, CUDA, and Gurobi.

EDUCATION

Texas Tech University (TTU) Ph.D. in Industrial Engineering	2025 – Present GPA: 4.00/4.00
Getulio Vargas Foundation (FGV) M.A. Courses in Mathematical Modeling	2023 – 2024
Military Institute of Engineering (IME) B.S. in Electronic Engineering	2020 – 2024 GPA: 8.25/10.00

PUBLICATIONS

- Cardoso, I.,** Teodoro, G., Validi, H. (2026). **A Polytime and Interpretable Approach for Solving Wordle.** Submitted to *Operations Research*.
- Gutierrez, R., **Cardoso, I.,** Validi, H. (2026). **Sport Scheduling to Minimize Travels at the FIFA World Cup 2026.** Submitted to *Optimization Letters*.
- Cardoso, I.,** et al. (2024). **Comparing Pre-Trained Object Detection Models for Autonomous Grasp on Affordable Prosthetic Hands.** *IEEE MeMeA*.
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
- Developing novel algorithms for NP-hard combinatorial problems, leveraging GPU acceleration and decomposition techniques to solve large-scale instances.
 - Advisor: Dr. Hamidreza Validi.
- Research Experience for Undergraduates, Memorial University (MUN)** 2023
- Designed and implemented computer vision algorithms for autonomous robotic grasping, integrating deep learning models with real-time control systems.
 - Advisor: Dr. Vinicius P. da Fonseca.

HONORS & AWARDS

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| • TTU Tye Industrial Endowment Engineering Scholarship | 2026 |
| • INFORMS Student Chapter Annual Award (Cum Laude) | 2025 |
| • 1st place, Shell Eco-marathon "The Road to 2050" | 2021 |
| • 5th place, Petrobras Challenge (RoboIME) | 2021 |
| • Gold Medal, Brazilian Math Olympiad (OBMEP) | 2018 |

AFFILIATIONS & ACTIVITIES

- **INFORMS Student Chapter:** Active member engaging in seminars and collaborative research.
- **Journal Club Presenter:** Discussing and analyzing peer-reviewed research in Operations Research.
- **Previous Activities:** Robotics Club (RoboIME), Shell Eco-marathon Team.

SOFTWARE & PROJECTS

- Wordle Optimization Solver** *Python, CUDA, Decision Trees*
GPU-accelerated solver achieving a theoretically optimal 3.42 average guesses. [\[View App\]](#)
- FIFA World Cup 2026 Scheduler** *Python, JS, MIP Solvers*
Interactive web app using MIP to optimize match scheduling and minimize travel. [\[View App\]](#)
- Expense Splitter** *Python, Linear Programming*
Optimization tool to minimize transactions required to settle shared expenses. [\[View App\]](#)

SKILLS

Programming	Python, C/C++, Matlab, Julia, Java, JavaScript, HTML, CSS, FPGA
Tools	Gurobi, Cuda/GPU, Git, L ^A T _E X, Linux, NetworkX, ROS, OpenCV, Arduino
Languages	Portuguese (native), English (fluent), French (intermediate)