

# Igor Lucindo Cardoso

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## 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

<b>Texas Tech University (TTU)</b> Ph.D. in Industrial Engineering	2025 – Present GPA: 4.00/4.00
<b>Getulio Vargas Foundation (FGV)</b> M.A. Courses in Mathematical Modeling	2023 – 2024
<b>Military Institute of Engineering (IME)</b> 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

<b>Research Assistant, Texas Tech University (TTU)</b>	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.	
<b>Research Experience for Undergraduates, Memorial University (MUN)</b>	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

• 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

<b>Wordle Optimization Solver</b>	<i>Python, CUDA, Decision Trees</i>
GPU-accelerated solver achieving a theoretically optimal 3.42 average guesses. [View App]	
<b>FIFA World Cup 2026 Scheduler</b>	<i>Python, JS, MIP Solvers</i>
Interactive web app using MIP to optimize match scheduling and minimize travel. [View App]	
<b>Expense Splitter</b>	<i>Python, Linear Programming</i>
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 <sup>A</sup> T <sub>E</sub> X, Linux, NetworkX, ROS, OpenCV, Arduino
Languages	Portuguese (native), English (fluent), French (intermediate)