

# Igor Lucindo Cardoso

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Lubbock, TX

## OBJECTIVE

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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

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- 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

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- 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*.

## RESEARCH EXPERIENCE

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- 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

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- 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

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- 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.

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

## SOFTWARE & PROJECTS

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### 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

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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, 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

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**Dr. Hamidreza Validi (advisor)** - [hvalidi@ttu.edu](mailto:hvalidi@ttu.edu)



**Dr. Vinicius P. da Fonseca (advisor)** - [vpradodafons@mun.ca](mailto:vpradodafons@mun.ca)