

# LARA DI CAVALCANTI PONTES

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**Languages:** Native Portuguese, Fluent English, and Basic French.  
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## EDUCATION

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**Universidade Federal da Paraíba (UFPB)** 05/2019 – 05/2024 (expected)  
*B.S. in Computer Engineering* – 9.71/10 (1st) *João Pessoa, PB, Brazil*  
*Thesis:* The maximum length car sequencing problem

## RESEARCH AND EXPERIENCE

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**Prescriptive Analytics Research Intern – SaveAdd** 09/2023 – Ongoing

- Implemented an efficient heuristic solution for the prescription of surprise bags using daily unsold stock. The feasibility of each surprise bag is determined by an embedded 3D bin packing model.
- Currently developing a data-driven decision making tool to identify the best hyper-segmentation strategy for food industry suppliers with unsold stock.
- Aiming to reduce food wastage while generating financial returns for companies with inventory at risk of loss.

**Research Assistant Fellow – LOG UFPB** 08/2020 – Ongoing  
*1-month Exchange Period – University of Bath* 07/2023  
*Supervisors:* Anand Subramanian, Maria Battarra  
*Co-author:* Carlos Neves

- Leading author of paper conditionally accepted in the European Journal of Operational Research (EJOR) about a new variant of the car sequencing problem, in which the objective function aims at maximizing the manufactured cars without any violation.
- Worked on the adaptation of existing MILP formulations to our variant and formulated a complementary MILP model aimed at minimizing the pace delay necessary to sufficiently relax the so-called option constraints.
- Developed combinatorial lower and upper bounds.
- Implemented an iterated local search-based heuristic and exact algorithms that perform either *ad hoc* search strategies in the decision version of the problem or make use of special ordered sets of type 1.
- Conducted an instance space analysis using the software MATILDA.
- Reduced the time required to solve the company's needs from hours to less than a second.

**Software Engineer Internship Offer (Winter 2023) – Meta UK** 04/2022

**Combinatorial Optimization Developer – Atoptima (France) and UFPB** 02/2021 – 08/2021

- Contributed to the open-source branch-price-and-cut framework Coluna.
- Worked on incorporating support for customized input data and optimizers.
- Implemented the retrieval of disaggregated solutions
- Added features to the column generation and the block decomposition modules.
- Enhanced functionality and robustness in the framework.

**Teaching Assistant – UFPB** 09/2020 – 12/2020  
*Introduction to Computer Engineering*

- Offered support outside of regular class hours regarding introductory electricity and a hands-on Arduino project focused on innovation.

- Inspired the students to pursue meaningful projects, having developed an automatic pill dispenser for older people when I took the course.

## ACHIEVEMENTS AND AWARDS

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**Best Undergraduate Work – Brazilian Society of Operations Research (Sobrapo)** 11/2021  
*"O problema de sequenciamento com restrições de cadência"* (the maximum length car sequencing problem) was awarded the Best Undergraduate Work at the Brazilian Operations Research Conference, the most prestigious undergraduate prize in the operations research (OR) field in Brazil.

**Research grant - Fiotec Fiocruz** 12/2023  
 Research grant provided by the Oswaldo Cruz Foundation (Fiocruz), Latin America's largest science, technology and health innovation institution. The proposed solution tackles the uneven distribution of Intensive Care Unit (ICU) hospital beds in Brazil combining predictive and prescriptive analytics. It was selected for the second stage of the "Digital Health Strategies for Combating COVID-19 in the Federal District Territories" hackathon.

**Tech Fellow – Fundação Estudar** 09/2022  
 A merit scholarship provided by Fundação Estudar, founded by well-known Brazilian businessmen Paulo Lemman, Marcelo Telles, and Beto Sucupira, to high-performing Brazilian students who aim to lead the next technology revolutions in Brazil. The program selected 23 out of 4,285 candidates, and it involves a study grant, access to a distinct community of people in tech, career support, and mentorship from prominent leaders in various fields.

**Young Researcher Award in the field of Exact and Earth Sciences (1st place) – UFPB** 12/2022  
 The research on "The maximum length car sequencing problem" was deemed the best among the 112 projects in the Exact and Earth Sciences category of the UFPB scientific program.

**First place at entrance exam for Computer Engineering at UFPB** 01/2019  
 I achieved a score of 965.9 in Mathematics at the National High School Exam (Enem), placing me among the top 0.1% of students in Brazil with scores exceeding 900.

**Maximum score at the National High School Exam (Enem) Essay** 03/2017  
 Seventy-seven students out of more than 6 million candidates got the maximum score that year.

**Second place at robotics competition for gold medalists at Brazilian Robotics Olympiad** 11/2017  
 I represented my state in this national competition and secured the first rank among students without prior programming knowledge.

**National Gold and Silver Medals at Brazilian Robotics Olympiad** 09/2017, 10/2018

**Silver Medals at International Mathematical Kangaroo Competition** 05/2017, 05/2018

**Silver Medal at Astronomy and Astronautics Brazilian Olympiad** 10/2017

## EXTRACURRICULAR ACTIVITIES

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**Social media manager – LOG UFPB** 06/2021 – Ongoing  
 I contribute to LOG social media accounts by creating and reviewing educational OR content. Our main goals are making scientific knowledge more tangible to the general audience and fostering inspiration among young Brazilian students to engage in this field of study.

## TOOLS AND INTERESTS

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<b>Tools</b>	C/C++, Julia, Python, Java, JuMP, CPLEX, HiGHS, OR-Tools, MiniSat, L <sup>A</sup> T <sub>E</sub> X, Git, Linux.
<b>Interests</b>	Combinatorial Optimization, Operations Research, Problem Solving, Mixed-Integer Programming, Stochastic Optimization, Healthcare, Social Fairness, Environmental Causes.