

LARA DI CAVALCANTI PONTES

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

Universidade Federal da Paraíba (UFPB) 05/2019 – 05/2024 (expected)
B.S. in Computer Engineering – 9.71/10 (highest GPA achieved by graduating student) João Pessoa, PB, Brazil

PUBLICATIONS

Lara Pontes, Carlos Neves, Anand Subramanian, and Maria Battarra. The maximum length car sequencing problem. *European Journal of Operational Research*, 2024. In Press.

Lara Pontes, Carlos Neves, Anand Subramanian, and Maria Battarra. O problema de sequenciamento com restrições de cadência. In: *LIII Simpósio Brasileiro de Pesquisa Operacional*, João Pessoa, 2021.

RESEARCH AND EXPERIENCE

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 published 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.

Research Fellow – Fiotec Fiocruz 12/2023 – Ongoing

- Research grant provided by the Oswaldo Cruz Foundation (Fiocruz), Latin America’s largest science, technology, and health innovation institution.
- Developed a MILP formulation to minimize the costs of ICU bed management in Brazil’s Federal District.

Prescriptive Analytics Research Intern – SaveAdd 09/2023 – 02/2024

- 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.
- Built a value proposition classification dataset based on The B2B Elements of Value.
- Developed a data-driven decision making tool with DistilBERT to identify the best hyper-segmentation strategy for food industry suppliers with unsold stock.
- Enhanced company intelligence and contributed to reducing food wastage while generating financial returns for companies with inventory at risk of loss.

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

Best Undergraduate Work – Brazilian Society of Operations Research (Sobrapo) 11/2021

“*O problema de sequenciamento com restrições de cadência*” was awarded the Best Undergraduate Work at the Brazilian OR Conference, the most prestigious undergraduate prize in the operations research (OR) field in Brazil.

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

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

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

Social media manager – LOG UFPB 06/2021 – Ongoing

Create and review educational OR content targeted at 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

Tools C/C++, Julia, Python, Java, JuMP, CPLEX, HiGHS, OR-Tools, MiniSat, L^AT_EX, Git, Linux.

Interests Combinatorial Optimization, Operations Research, Problem Solving, Mixed-Integer Programming, Stochastic Optimization, Healthcare, Social Fairness, Environmental Causes, Sustainability.