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 (1st) *João Pessoa, PB, Brazil*
Thesis: The maximum length car sequencing problem

RESEARCH AND EXPERIENCE

Prescriptive Analytics Research Intern – SaveAdd 09/2023 – Ongoing

- Currently developing a tool to optimally distribute unsold stock from food industry suppliers to small businesses and non-governmental organizations. I proposed a mixed-integer linear programming (MILP) model to formalize the problem, and stochastic alternatives to explore uncertainty are being studied.
- 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.

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).
- Proposed and solved 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 Melbourne Algorithm Test Instance Library with Data Analytics (MATILDA).

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
- Enhanced the column generation and the block decomposition modules.

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

Research grant - Fiocruz Innovation Incubator 12/2023
The proposed prototype that tackles the uneven distribution of Intensive Care Unit (ICU) hospital beds in Brazil was selected for the second stage of the "Digital Health Strategies for Combating COVID-19 in the Federal District Territories" hackathon. The solution involves a prescriptive model aimed at minimizing the distance to the closest ICU bed, considering demands predicted by a machine learning model.

First Place at the First IFPB Female Programming Contest – IFPB 09/2023

Young Researcher Award in the field of Exact and Earth Sciences (1st place) – UFPB 12/2022

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 successful professionals and entrepreneurs.

Research scholarship – CNPq 09/2021 – 08/2022

Best Undergraduate Work – Brazilian Operational Research Society (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.

First place at entrance exam for Computer Engineering at UFPB 01/2019

National Silver Medal at Brazilian Robotics Olympiad 10/2018

Silver Medal at Canguru Mathematics Olympiad 05/2018

Second place at robotics competition for gold medalists at Brazilian Robotics Olympiad 11/2017
Ranked first among students without previous programming knowledge.

Silver Medal at Astronomy and Astronautics Brazilian Olympiad 10/2017

National Gold Medal at Brazilian Robotics Olympiad 09/2017

Silver Medal at Canguru Mathematics Olympiad 05/2017

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.

EXTRACURRICULAR ACTIVITIES

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

Tools C/C++, Julia, Python, Java, JuMP, CPLEX, HiGHS, OR-Tools, MiniSat, LaTeX, Git, Linux.
Interests Combinatorial Optimization, Operations Research, Problem Solving, Mixed-Integer Programming, Stochastic Optimization, Healthcare, Social Fairness, Environmental Causes.