LARA DI CAVALCANTI PONTES

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

B.S in Computer Engineering – Universidade Federal da Paraíba – 9.74/10 (1st) 05/2019 – 06/2024 (expected)

EXPERIENCE

Research Assistant Fellow – UFPB 09/2021 – 08/2022
Introduced a new NP-complete scheduling problem in the literature. The work was inspired by a multinational automotive company, and the proposed solution includes heuristics and integer programming models associated with exact algorithms.

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

Combinatorial Optimization Developer – Atoptima (France) and UFPB 02/2021 – 08/2021
My job was focused on contributing to the branch-price-and-cut framework Coluna. I implemented the retrieval of disaggregated solutions, worked on the support for customized input data and optimizers, spotted and fixed bugs, improved the coverage of the MathOptInterface wrapper, and wrote unit tests. Also, I added features to the BlockDecomposition package. This internship gave me experience in software engineering and taught me much about the theory of important algorithms in operations research, while working directly with their implementations.

PROJECTS

Scheduling with cadence constraints
A large multinational automotive company imposes cadences in the assembly line when manufacturing cars, so the ones with more demanding features are not scheduled in close proximity to each other. As the first author of the paper, I worked on the mathematical formulation of the problem, developed lower and upper bounds for it, and implemented the exact and heuristic algorithms used in the solution. The company's needs are solved to optimality in less than a second, while manual approaches would take hours to produce a feasible schedule. This work was submitted to the European Journal of Operational Research.

Food distribution fairness
As the main researcher of this ongoing project, my responsibility is to develop a decision support system, which optimizes the distribution of food that would potentially be wasted by providers to small businesses and non-governmental organizations.

Mask Detection
My first machine learning project, in which we used YOLOv5 for detecting the correct usage of masks and sending notifications and pictures via Telegram when people without mask or wearing it incorrectly were identified.

ACHIEVEMENTS AND AWARDS

Young Researcher Award in the field of Exact and Earth Sciences – 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.

Best Undergraduate Work – Brazilian Operational Research Society (Sobrapo) 11/2021
O problema de sequenciamento com restrições de cadência (Scheduling with cadence constraints problem) was awarded the Best Undergraduate Work at the Brazilian OR Conference, the most prestigious undergraduate prize of the OR field in Brazil.

Silver Medal at Canguru Mathematics Olympiad 05/2018

National Gold Medal at Brazilian Robotics Olympiad 12/2017

Silver Medal at Astronomy and Astronautics Brazilian Olympiad 10/2017

TOOLS AND INTERESTS

Tools C, C++, Julia, JuMP, CPLEX, OR-Tools, MiniSat, LaTeX, Git, Linux.
Interests Combinatorial Optimization, Operations Research, Problem Solving, Integer Programming, Software Engineering.

EXTRACURRICULAR ACTIVITIES

Social media manager LOG – UFPB 06/2021 – Ongoing
I contribute to our laboratory LOG UFPB Instagram account by creating and reviewing educational OR content.