Curricular Summary

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1. Education/Training

- 2000-2003: Undergraduate degree - Universidade Federal Ouro Preto (UFOP)
- 2004-2009: Graduate degree (PhD) - Instituto Nacional de Pesquisa Espaciais (INPE)
- 2009-2009: Post-Doctoral - Instituto Nacional de Pesquisa Espaciais (INPE)
- 2017-2017: Research Internship Abroad - Faculdade de Economia, Universidade do Porto (Portugal)
- 01/2024: Short-term Visiting Researcher - Southampton Business School, University of Southampton (United Kingdom)

2. Professional History

- **2025 – Present:** Pesquisa Operacional (POpe) Journal
  - Editor-in-Chief.
- **2011 – Present:** Universidade Federal de São Paulo (UNIFESP)
  - Associate Professor.
  - 2018–2021: Coordinator of the Postgraduate Program in Operational Research (collaboration with UNIFESP and ITA).
  - 2023–2027: Coordinator of the Graduate and Research Chamber (Câmara de Pós-Graduação e Pesquisa) at UNIFESP.
- **2009 – 2011:** Universidade Estadual Paulista Júlio de Mesquita Filho (UNESP)
  - Assistant Professor.

3. Five of the most Relevant Scientific Results

1. Chaves, A.A.; Resende, M.G.C.; Schuetz, M.J.A.; Brubaker, J.K.; Katzgraber, H.G.; Arruda, E.F.; Silva, R.M.A. (2025). *A Random-Key optimizer for combinatorial optimization. Journal of Heuristics, v. 31, p. 32.* DOI: 10.1007/s10732-025-09568-z

   This paper presents the Random-Key Optimizer (RKO), a highly versatile and modular metaheuristic framework. RKO effectively unifies and integrates diverse classic search strategies (like Simulated Annealing and GRASP) using random-key encoding, demonstrating superior performance by producing high-quality solutions across three distinct NP-hard problems. Its practical value is further

amplified by its publicly available C++ implementation, making it a robust and accessible tool for combinatorial optimization.

2. Schenekemberg, C.M.; Guimarães, T.A.; Chaves, A.A.; Coelho, L.C. (2023). *A Three-Front Parallel Branch-and-Cut Algorithm for Production and Inventory Routing Problems. Transportation Science, 58(4):687-707.* DOI: 10.1287/trsc.2022.0261

   Note: The proposed algorithm integrates two- and three-index formulations with a local search matheuristic, significantly outperforming existing methods on benchmark instances. It achieves optimal solutions for numerous small- and medium-size instances, establishes many new best-known solutions and lower bounds, and is the first to address instances with an unlimited fleet. We won second place in the DIMACS IRP challenge with a serial version of this algorithm (`http://dimacs.rutgers.edu/programs/challenge/vrp/results/`).

3. Schenekemberg, C.M.; Chaves, A.A.; Coelho, L.C.; Guimarães T.A.; Avelino, G.G. (2022). *The Dial-a-Ride Problem with Private Fleet and Common Carrier. Computers and Operations Research, 147, 105933.* DOI: 10.1016/j.cor.2022.105933

   Note: This paper introduces and solves the dial-a-ride problem with private fleet and common carrier, allowing unmet demand to be outsourced to mobility-on-demand services. A branch-and-cut algorithm and a BRKGA-QL metaheuristic efficiently handle large instances, proving optimality for most tested cases. Results demonstrate significant benefits for providers and users, especially during peak times or capacity constraints.

4. Silva, T.T.; Chaves, A.A.; Yanasse, H.H. (2021). *A New Multicommodity Flow Model for the Job Sequencing and Tool Switching Problem. International Journal of Production Research, 59, 3617-363.* DOI: 10.1080/00207543.2020.1748906

   Note: This paper introduces a novel mathematical model for the Job Sequencing and Tool Switching Problem, utilizing multicommodity flow. This model outperforms existing ones in computational tests, achieving better execution times and solving more instances optimally.

5. Chaves, A.A.; Gonçalves, J.F.; Lorena, L.A.N. (2018). *Adaptive Biased Random-key Genetic Algorithm with Local Search for the Capacitated Centered Clustering Proble. Computers & Industrial Engineering, 331-346.* DOI: 10.1016/j.cie.2018.07.031

   Note: The main contribution of the paper is the introduction of an adaptive Biased Random-key Genetic Algorithm for combinatorial (BRKGA) optimization problems. This method incorporates on-line parameter control, with a focus on diversification and intensification through a novel adaptive strategy.

4. Research Grants

Current Research Grants

- 2025-2028: FAPESP - Regular (2024/08848-3): *Full truckload pickup and delivery problem: optimization methods and practical constraints of the supply chain middle mile.*
- 2025–2028: CNPq – Research Productivity Award (305557/2024-6): *Optimizing vehicle routing with pickup and delivery in the middle mile.*

Completed Research Grants

- 2019–2024: FAPESP – Young Investigator Grant - Phase 2 (2018/15417-8): *Development of a hybrid metaheuristic with adaptive control flow and parameters.*
- 2017 – 2017: FAPESP – Research Internship Abroad (BEP) - (2016/07135-7): *Development of a flexible hybrid method with automatic tuning of parameters.*
- 2013 – 2015: FAPESP – Young Investigator Grant (2012/17523-3): *New hybrid methods to resolve combinatorial optimization problems.*
- 2013–2025: CNPq – Research Productivity Award (304979/2012-0, 07330/2015-0, 303736/2018-6, 312747/2021-7).

5. Academic Indicators

- Journal papers: 38 (last 10 years: 29)
- Book Chapters: 5
- Conference papers: 72
- Participation in events: 47 (last 10 years: 24)
- Research Projects: 20 (last 10 years: 18)
- Citations:
  - Google Scholar: 1537 (H-index: 21)
  - Scopus: 759 (H-index: 17);
  - Web of Science: 572 (H-index: 13).
- Supervisions:
  - Master's dissertations:
    - Concluded = 11
    - Ongoing = 3
  - Doctoral theses:
    - Concluded = 3
    - Ongoing = 5
  - Post Doctoral:
    - Concluded = 5
    - Ongoing = 3
- Technical consultancies:
  - Firm: Ball (Development of an evolutionary metaheuristic with online parameter tuning and implementation of a framework for lot-sizing optimization applied to can production planning.)
  - Firm: Geoambiente (Adaptive metaheuristics with automatic parameter calibration for the development of a municipal services planning and management system, integrated with geolocation and mobile devices).

6. Other information

- International Network
  - My international research collaboration networks include the researchers Mauricio G. C. Resende (Washington University, USA), José Fernando Gonçalves (University of Porto, Portugal), Alysson M. Machado (University of Melbourne, Austrália), Leandro C. Coelho (University of Laval, Canadá), Maryam Darvish (CIRRELT, Canadá), Edilson Arruda (University of Southampton), Raf Jans (HEC Montreal), Cristobal Miralles (Universitat Politècnica de València) and Alicia Robles Velasco (Universidad de Sevilla, Spain).
- Editor-in-Chief
  - Currently serving as Editor-in-Chief (since August 2025) for Pesquisa Operacional (POpe), the journal of the Brazilian Operations Research Society (SOBRAPO).