Breno Serrano de Araujo

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Education

Technical University of Munich, Germany — Nov. 2020 – present
Ph.D. Student in Management, TUM School of Management
Advanced Optimization in a Networked Economy (AdONE) Research Training Group
Advisor: Maximilian Schiffer

Massachusetts Institute of Technology, Cambridge, MA, USA — Oct. 2023 – Feb. 2024
Visiting Ph.D. Student, Sloan School of Management
Host Professor: Alexandre Jacquillat

Pontifical Catholic University of Rio de Janeiro (PUC-Rio), Brazil — 2018 – 2020
M.Sc. in Computer Science
Advisor: Thibaut Vidal

Federal University of Rio de Janeiro (UFRJ), Brazil — 2011 – 2017
B.Sc. in Electronic and Computer Engineering, Magna Cum Laude

Technical University of Munich, Germany — 2014 – 2015
Exchange Student, Electrical Engineering and Information Technology

Professional Experience

TechnipFMC, Research and Development Engineer, Brazil — 2018 – 2020
- Development of hybrid machine learning and finite element analysis (FEA) software for the design of offshore marine structures.

Accenture, Data Science Analyst, Brazil — 2017 – 2018
- Development of machine learning and deep learning models for different applications, including yield forecasting for a suger-producing company and fraud detection for an auto insurance company.

Choice Technologies Holding, Data Science Intern, Brazil — 2016 – 2017
- Data preparation, analysis, and visualization.

Publications

[1] B. Serrano, A. Florio, S. Minner, M. Schiffer, T. Vidal (2024). Contextual Stochastic Vehicle Routing with Time Windows, *arXiv preprint arXiv:2402.06968*.
To be submitted to Operations Research

[2] B. Serrano, T. Vidal (2024). Community Detection in the Stochastic Block Model by Mixed Integer Programming, *Pattern Recognition*, 152, 110487.

[3] B. Serrano, S. Minner, M. Schiffer, T. Vidal (2024). Bilevel Optimization for Feature Selection in the Data-Driven Newsvendor Problem, *European Journal of Operational Research*, 315(2), 703-714.

[4] Í. Santana, B. Serrano, M. Schiffer, T. Vidal (2022). Support Vector Machines with the Hard-Margin Loss: Optimal Training via Combinatorial Benders' Cuts, *arXiv preprint arXiv:2207.07690*.
Under review at the Journal of Global Optimization

[5] V. Ribeiro Machado da Silva, L. Volnei Sudati Sagrilo, B. Serrano de Araujo (2022). Applied Deep Learning for Slender Marine Structure Dynamic Analysis, *Journal of Offshore Mechanics and Arctic Engineering*, 144(2), 021701.

[6] V. Ribeiro Machado da Silva, B. Serrano de Araujo (2020). Convolutional Neural Networks Applied to Flexible Pipes for Fatigue Calculations, *Proceedings of the ASME 2020 39th International Conference on Ocean, Offshore and Arctic Engineering*, vol. 4: Pipelines, Risers, and Subsea Systems. Virtual, Online.

[7] B. Serrano de Araujo, H. de Almeida, F. de Mello (2019). Computational Intelligence Methods Applied to the Fraud Detection of Electric Energy Consumers, *IEEE Latin America Transactions*, 17(01), 71-77.

Talks

Optimizing a ride-hailing system with a mix of on-demand and pre-booked customers under distributional shift

- Sept. 3–6, 2024: *International Conference on Operations Research (OR 2024)*, Munich, Germany.

Bilevel Optimization for Feature Selection in the Data-Driven Newsvendor Problem

- Oct. 15–18, 2023: *2023 INFORMS Annual Meeting*, Phoenix, AZ, USA.
- July 3–6, 2022: *32th European Conference on Operational Research (EURO 2022)*, Espoo, Finland.

Data-Driven Approaches for the Feature-based Vehicle Routing Problem with Time Windows

- July 23–26, 2023: *2nd Triennial Conference of the INFORMS Transportation and Logistics Society (TSL 2023)*, Chicago, IL, USA.

Support Vector Machines with the Hard-Margin Loss: Optimal Training via Combinatorial Benders' Cuts

- April 26–28, 2023: Invited talk at the workshop *Exploring synergies: Machine Learning meets Physics and Optimization, Thematic Einstein Semester on Mathematical Optimization for Machine Learning*, Zuse Institute Berlin, Germany.

Academic Activities and Awards

Awarded the TSL Cross-regional Doctoral Grant (2023) in the amount of $1500 (USD).

Reviewer for journals: *European Journal of Operational Research (EJOR)*, *International Journal of Production Economics (IJPE)* and *Transactions in Operations Research (TOP)*.

Subreviewer for conferences: *Conference in Emerging Technologies in Transportation Systems (TRC-30)*, *11th Triennial Symposium on Transportation Analysis conference (TRISTAN 2022)* and *2nd Triennial Conference of the INFORMS Transportation and Logistics Society (TSL 2023)*.

Co-organizer of the AdONE Research Retreat 2021, Oct. 11–13, 2021, Dießen am Ammersee, Germany.

References

Maximilian Schiffer, TUM (Primary Ph.D. Advisor)
✉ schiffer@tum.de

Stefan Minner, TUM (Secondary Ph.D. Advisor)
✉ stefan.minner@tum.de

Thibaut Vidal, Polytechnique Montréal
✉ thibaut.vidal@polymtl.ca

Alexandre Jacquillat, MIT
✉ alexjacq@mit.edu