

# Vitoria Guardieiro

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## Education

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### M.Sc. in Mathematical Modeling

Mar 2021 – Jun 2023

*Fundação Getulio Vargas*

*Rio de Janeiro, Brazil*

- Advisors: Jorge Poco (FGV) and Marcos M. Raimundo (University of Campinas)
- Dissertation: Multi-objective Optimization in Machine Learning - A Systematic Review

### B.Sc. in Applied Mathematics

Feb 2017 – Dec 2020

*Fundação Getulio Vargas*

*Rio de Janeiro, Brazil*

- Advisors: Jorge Poco (FGV) and Marcos M. Raimundo (University of Campinas)
- Bachelor's dissertation: Application of multi-objective optimization in machine learning problems to decrease discrimination

## Publications

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Guardieiro, V., M. Raimundo, M., and Poco, J. (2023). "Enforcing fairness using ensemble of diverse Pareto-optimal models". *Data Mining and Knowledge Discovery*.  
<https://doi.org/10.1007/s10618-023-00922-y>

Guardieiro, V., M. Raimundo, M., and Poco, J. (2022). "Analyzing the Equity of the Brazilian National High School Exam by Validating the Item Response Theory's Invariance". *Proceedings of the 15th International Conference on Educational Data Mining*. <https://doi.org/10.5281/zenodo.6852946>

Guardieiro, V. and Poco, J. (2021). "Exploring counterfactual antecedents to reduce criminality in Rio de Janeiro" (Project report). School of Applied Mathematics, Fundação Getulio Vargas.  
<https://hdl.handle.net/10438/31623>

## Research Experience

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### Research Scientist

Oct 2023 – Now

*New York University*

*New York, US*

- Research on Topological Data Analysis for Machine Learning explainability at the Visualization Imaging and Data Analysis Center (VIDA) with Professor Claudio Silva

### Visiting Researcher

Jan 2023 – Apr 2023

*New York University*

*New York, US*

- Research on Topological Data Analysis for Machine Learning explainability at the Visualization Imaging and Data Analysis Center (VIDA) with Professor Claudio Silva

### Undergraduate Research Assistant

2017 – 2020

*Fundação Getulio Vargas*

*Rio de Janeiro, Brazil*

- Worked with Waze data, developing a clustering algorithm for interval time-spatial structures. Advised by Jorge Poco
- Studied Natural Language Processing, contributing to databases such as Open Multilingual Wordnet (OMW) and Suggested Upper Merged Ontology (SUMO). Advised by Alexandre Rademaker
- Elaboration of the Consumer Price Index - Web (IPC-Web) for the Brazilian Institute of Economics (IBRE). Advised by Renato Rocha Souza

## Other Experience

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### Teaching Assistant

2017, 2021 – 2022

*Fundação Getúlio Vargas*

*Rio de Janeiro, Brazil*

- Disciplines from the B.Sc. in Applied Mathematics and the B.Sc. in Data Science: Machine Learning (2022/1 and 2022/2), Continuous Optimization (2022/2), Optimization for Data Science (2022/2), Statistical Inference (2021/2), and Introduction to Computing (2017/1)

### Data Science Intern/Data Scientist

May 2020 – Jul 2021

*Gabriel Tecnologia*

*Rio de Janeiro, Brazil*

- Gabriel is a startup that develops technology focused on public security
- I developed computer vision object detection, classification, and tracking models for the automatic detection of anomalies in security camera videos

### IT Intern

Jan 2020 – Apr 2020

*BTG Pactual*

*Rio de Janeiro, Brazil*

- BTG Pactual is the biggest investment bank in Latin America
- I developed dashboards, visualizations, and metrics for internal IT products

### Mathematical Modelling Intern

Jan 2019 – Sep 2019

*PSR - Energy Consulting and Analytics*

*Rio de Janeiro, Brazil*

- PSR is a global provider of technological solutions in the areas of electricity and natural gas (E&G)
- I developed optimization programs for maintenance scheduling in thermoelectric and hydroelectric plants

## Awards & Scholarships

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### Coordination for the Improvement of Higher Education Personnel (CAPES)

*M.Sc. Scholarship*

*Mar 2021 – Feb 2023*

### FGV's Center for the Development of Mathematics and Science (CDMC)

*B.Sc. Scholarship*

*2017 – 2020*

### Brazilian Mathematical Olympiad of Public Schools (OBMEP)

*One gold medal, two silver medals, and three bronze medals*

*2011 – 2016*

### Jovens Gênio Algar (JoGAr) - Coding Marathon

*First place in the advanced category (2016), third place (2015), and fourth place (2014)*

*2014 – 2016*

## Specialized Skills

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**Programming Languages:** Python, Julia, MATLAB, R, C, C++

**Languages:** English (TOEFL 112/120), Portuguese (Native)