Rafael Monteiro | **Applied Mathematician, Ph.D.** | Sao Paulo, Brazil

rafael.a.monteiro.math@gmail.com | (+55) 11 95384 5343 | sites.google.com/view/rafaelmonteiro-math
github.com/rafael-a-monteiro-math | linkedin.com/in/rafael-a-monteiro-appliedmath

Summary

I am an applied Mathematician working in Industry and AI/ML consulting. Focused on creating and engaging statistical, mathematical, and computational methods to simplify, accelerate, decrease costs, and enhance data-driven strategies for decision-making. Highly adaptable, I lived in several countries and worked in cross-functional and cross-cultural teams. I enjoy public speaking and integrating diverse sources of information (qualitative/quantitative) into coherent, impactful stories.

As a consultant, I focus on bridging gaps in company operations and decision-making processes. Pilot projects I have worked on:

- Noise reduction through machine learning, statistical models, and methods to aggregate decisions.
- Natural Language Processing (creating embeddings to enhance vector search, information extraction, fine-tuning LLMs to generate new content, etc).
- Redesign time-consuming tasks to make them quantifiable, data-driven, leaner, and more efficient.
- Statistical and computational) modeling tasks/processes that have never been quantified nor had their value stream mapped.

Experience

Sep 2024 - PRESENT

Grupo SBF, SAO PAULO, BRAZIL - *Data Scientist*

- Work on enhancing NLP tools and experimenting with new AI tools within the company.

JUL 2022 - Aug 2024

Grupo SBF, SAO PAULO, BRAZIL - *Data Specialist*

- Work for Brazil's biggest sports goods retail company, focusing on creating new ways to understand customer behavior, automation, systematization of business processes, and development and design of quantitative insights for decision-making.

AUG 2017 - MAY 2022

Mathematics for Advanced Materials - Open Innovation Laboratory (Tohoku University), SENDAI, JAPAN - *Postdoctoral Researcher*

- Partnered with scientists of different backgrounds (chemists, engineers, physicists) to develop, automate, and invent new data-driven techniques applied to Material Science.
- Collaborated in scientific projects, several of which are featured in international journals.
- Applied agile management in scientific development, where projects' complexity and interdisciplinarity made self-organization crucial to translating collective knowledge into action and experimentation.

AUG 2015 - JUL 2017

University of Minnesota, MINNEAPOLIS, USA - *Postdoctoral Researcher*

- Carried out scientific research, shared results at conferences, and published in international journals.
- Lecturer in several disciplines for undergraduate students in STEM careers.

Education

AUG 2010 - JUL 2015

Indiana University, BLOOMINGTON, IN, USA - *Ph.D. Mathematics*

JAN 2008 - FEB 2010

Instituto de Matemática Pura e Aplicada - IMPA, RIO DE JANEIRO, BRAZIL **-** *M.Sc. in Computational Mathematics and Modeling*

MAR 2004 - DEC 2007

Universidade de São Paulo - USP, SÃO PAULO, BRAZIL **-** *B.S. Applied Mathematics*

Skills

• Computational Modeling • Statistics • Data Analysis • Algorithms and Data Structures • Python • C++ • R
• MATLAB • SQL • Time Series Analysis • Machine Learning • Deep Learning • Reinforcement Learning
• Data Visualization • Optimization • Project Management • Research • Teamwork • Large Language Models
• Generative AI • Natural Language Processing

Honors & Awards

2014 - 2015

DAAD scholarship Research Grants (Short-Term Grants), GERMANY
Outstanding Thesis Award, BLOOMINGTON, IN, USA **-** *Indiana University, Dept. of Mathematics*
Dissertation Year Research Fellowship, BLOOMINGTON, IN, USA - *College of Arts and Sciences, Indiana University*

Featured projects

- In Statistical Pattern Recognition
  - 2020 - Journal of Physical Chemistry A

    The Rising Sun Envelope Method: an automatic and accurate peak location technique for XANES measurements, *Monteiro, R., Takahashi, K., and Miyazato, I.*

- In Pattern Formation
  - 2019 - Archive for Rational Mechanics and Analysis

    The Swift-Hohenberg Equation under directional-quenching: finding heteroclinic connections using spatial and spectral decompositions, *Monteiro, R. and Yoshinaga, N.*

Other

Portuguese and English (fluent). Spanish (intermediate). Japanese and French (basic). Enthusiastic of mountain climbing, swimming, and playing musical instruments.