

# Thiago Rodrigo Ramos

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## Summary

I am a highly skilled AI researcher and Data Scientist with a Ph.D. in Mathematics/Statistical Learning from IMPA. My expertise encompasses machine learning, deep learning, and natural language processing. With a strong foundation in theoretical knowledge, I have successfully led and contributed to industry projects that have gained national recognition. I am passionate about leveraging AI to solve real-world problems and am dedicated to advancing the field through research and innovation.

## Work Experience

- 2023 **Data Scientist Specialist**, *Samsung Research Brazil, SRBR*  
I spearheaded the development of innovative healthcare initiatives for Samsung devices. In my role, I worked extensively with time-series data and sensor information from various mobile devices and wearables. I played a key role in developing cutting-edge AI solutions aimed at enhancing user experiences and well-being.
- 2023 **Postdoctoral Researcher**, *Instituto de Matemática Pura e Aplicada - IMPA*  
I conducted both practical and theoretical research in the field of machine learning where I led and organized project efforts. In addition, I actively authored scientific papers and contributed to the academic community through my research endeavors.
- 2023 **AI Consultant**, *Rio de Janeiro City Hall*, partnership with IMPA  
We focused on utilizing radar and satellite data for short-term rainfall and flood predictions. Employed classical machine learning models to achieve highly accurate predictions. For more details, see the project [here](#).
- 2022 **AI Consultant**, *Cartesi Blockchain*, partnership with IMPA  
We utilized computational simulations and statistical theory, such as hypothesis testing and anomaly detection, to enhance Cartesi Blockchain Proof-of-Stake lottery system.
- 2022 **AI Consultant**, *Rede Globo*, partnership with IMPA  
We have developed machine learning algorithms to extract keywords that cover over 1.5 million movies and TV series, characterizing each title. These algorithms are employed to create effective methods for recommending titles. For more information, see the project [here](#).
- 2021 **AI Consultant**, *Grupo Dasa*, partnership with IMPA  
We developed an algorithm capable of analyzing magnetic resonance images to detect pregnancy-related issues. Achieved a remarkable accuracy rate of 93%, offering a valuable solution for the early diagnosis of pregnancy problems, particularly in remote areas lacking specialists. For further insights, please visit the project [here](#).
- 2020 **AI Consultant**, *Stone Pagamentos*, partnership with IMPA  
We developed a machine learning algorithm that enhanced credit decisions, unlocking market potential and solving a critical challenge for the company. Achieved significant results and provided valuable insights. For more information, see the project [here](#).

## Education

- 2018-2022 **Ph.D. in Mathematics**, *Instituto de Matemática Pura e Aplicada - IMPA*, Rio de Janeiro - Brazil  
  - Thesis: Boosting and concentration of measure methods in Machine Learning.
  - First doctoral title awarded by the Center for Projects and Innovations at IMPA.
- 2016-2018 **M.Sc. in Mathematics**, *Universidade de São Paulo, ICMC-USP*, São Paulo - Brazil  
  - Dissertation: Teoria ergódica em fluxos homogêneos e teoremas de Ratner.
  - Graduated with distinction, earning all A grades throughout the program.
- 2012-2015 **Bachelor in Mathematics**, *Universidade de São Paulo, ICMC-USP*, São Paulo - Brazil

## Publications

- In submission 2023 **BlockBoost: Scalable and Efficient Blocking through Boosting**, with R. I. Oliveira, P. Orenstein, T. R. Ramos, A. Akira, R. Schuller.
- In submission 2023 **Split Conformal Prediction Extends to Non-Exchangeable Data**, with R. I. Oliveira, P. Orenstein, T. R. Ramos, J. V. Romano.

- IAAI 2023 **AmnioML: Amniotic Fluid Segmentation and Volume Prediction with Uncertainty Quantification**, with D. Csillag, L. Paes, R. I. Oliveira, P. Orenstein, R. Schuller, R. Seixas, T. R. Ramos, J. V. Romano.
- In submission 2022 **Split Conformal Prediction for Dependent Data**, with R. I. Oliveira, P. Orenstein, T. R. Ramos, J. V. Romano.
- Ph.D, Thesis 2022 **Boosting and Concentration of Measure Methods in Machine Learning**, T. R. Ramos
- AISTATS 2022 **ExactBoost: Directly Boosting the Margin in Combinatorial and Non-decomposable Metrics**, with D. Csillag, C. Piazza, R. I. Oliveira, P. Orenstein, T. R. Ramos, J. V. Romano.

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## Skills and Expertise

### Computer **Vim, Linux terminal, Git, Bash**

Skills I possess strong computer skills with a focus on Linux-based systems, including Ubuntu, Debian, and CentOS. My proficiency extends to efficient use of the Linux terminal and advanced expertise in the Vim text editor for coding and document navigation. I am adept at Bash scripting for automation, Git for version control, and basic system administration tasks.

### Deep Learning **TensorFlow, PyTorch**

I have extensive experience with deep learning tools in Python, particularly in the domains of Image Segmentation and Natural Language Processing.

### NLP **NLTK, Spacy, Keybert, Flair**

I have a strong background in Natural Language Processing (NLP) tools, focusing on keyword extraction, entity recognition, data aggregation, and entity resolution tasks.

### Data **Plotly, Matplotlib, Seaborn, SHAP, MAPIE**

Exploration Throughout my career, I have effectively applied exploratory data analysis techniques, data visualization methods, uncertainty quantification, and explainability tools to extract insights from data, communicate findings, and provide transparent explanations for model predictions.

### Theoretical **Learning Theory, Statistical Theory**

Knowledge My **doctoral thesis** integrated statistics, pure mathematics, and machine learning applications. As a result, I possess extensive knowledge of machine learning theory and its practical applications. This advantage enables me to stay updated with the latest advancements in the field of machine learning and effectively apply state-of-the-art tools in the projects I undertake.

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## Achievements

- 2023 **IAAI Deployed Application Award**, *Association for the Advancement of Artificial Intelligence - AAAI*  
The **project**, a collaboration between Centro Pi (IMPA Project and Innovation Center) and **Grupo Dasa**, was honored with the prestigious "Deployed Application Award" in a highly competitive category at an international conference on AI. This recognition highlights the exceptional performance of the algorithm, emphasizing its successful application and validation of theoretical models.
- 2021 **Featured in National News**, *Folha de S.Paulo*  
My collaborative project with Grupo Dasa, employing AI to prevent pregnancy-related diseases, gained national recognition in a September 2021 *Folha de S.Paulo* article. The piece highlighted our algorithm's innovative impact, surpassing traditional medical analyses. This acknowledgment reflects our significant research advancement. For details, visit the project [here](#).