Caio F. Deberaldini Netto

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EDUCATION

Johns Hopkins University (Baltimore, MD) Aug 2023 - Aug 2028*
Ph.D. in Applied Mathematics and Statistics *Expected graduation date
Amazon AI PhD Fellow
Supervisor: Prof. Luana Ruiz

University of São Paulo (São Paulo, SP, Brazil) Jun 2021 - Jun 2023
M.Sc. in Electrical & Computer Engineering
Programa de Bolsas Itaú (PBI) Fellowship
Supervisor: Prof. Fabio Cozman

University of São Paulo (São Paulo, SP, Brazil) Feb 2016 - Dec 2020
B.Sc. in Mechatronics Engineering
Programa de Bolsas Itaú (PBI) Scholarship

PUBLICATIONS

Graph Semi-Supervised Learning for Point Classification on Data Manifolds
C. Netto, Z. Wang, and L. Ruiz
New Perspectives in Advancing Graph Machine Learning @ NeurIPS, 2025. (Under review at IEEE TSP)

Galois Theory Challenges Weisfeiler Leman: Invariant Features for Symmetric Matrices and Point Clouds
C. Netto, B. Wen, T. Samakhoana, S. Villar, and T. Huang
New Perspectives in Advancing Graph Machine Learning @ NeurIPS, 2025.

Rademacher Meets Colors: More Expressivity, but at What Cost?
C. Netto *et al.*
New Perspectives in Advancing Graph Machine Learning @ NeurIPS, 2025.

Improved Image Classification with Manifold Neural Networks
C. Netto, Z. Wang, and L. Ruiz
IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), 2025. (*Oral*)

Early Detection of Extreme Storm Tide Events Using Multimodal Data Processing
M. Barros, C. Netto *et al.*
38th AAAI Conference on Artificial Intelligence, AI for Social Impact Track (AISI), 2024.

A Physics-Informed Neural Operator for the Simulation of Surface Waves
M. Mathias, C. Netto *et al.*
Journal of Offshore Mechanics & Arctic Engineering, 2023.

Modeling Oceanic Variables with Dynamic Graph Neural Networks
C. Netto *et al.*
AI: Modeling Ocean and Climate Change @ International Joint Conference on Artificial Intelligence (IJCAI-ECAI), 2022. (*Oral*)

Prediction of Environmental Conditions for Maritime Navigation using a Network of Sensors: A Practical Application of Graph Neural Networks
C. Netto *et al.*
Symposium On Knowledge Discovery, Mining, and Learning (KDMiLe), 2020. (*Oral*)

PROFESSIONAL EXPERIENCE

Numerical Offshore Tank (TPN), *University of São Paulo* Apr 2023 – Aug 2023
Research Engineer

- Developed learning algorithms for forecasting oceanic variables, investigating the integration of domain knowledge with relational learning for spatiotemporal ocean problems.

- Studied the limitations of graph neural networks in physical systems and methods for incorporating physical knowledge into these architectures.
- Co-advised two undergraduate students on their first research project, providing models, data, and training pipelines. This work led to a publication at an international conference.

Itaú-Unibanco **(São Paulo, Brazil)** Feb 2021 – May 2021
Data Scientist

- Participated in Itaú-Unibanco's academic summer program, developing a system for predicting and monitoring real estate trends in São Paulo.
- Integrated diverse time-series data sources, including socioeconomic, census, and transactional data, for trend forecasting.

Big Data **(São Paulo, Brazil)** Jul 2019 – Jan 2020
Data Scientist Intern

- Contributed to the development of pricing and microtargeting systems for clients, supporting dynamic product pricing and assortment strategies using data-driven tools.

Turing USP, ***University of São Paulo*** Apr 2019 – Feb 2021
Leader, Computer Vision Research Team, Advisor: Fabio Gagliardi Cozman

- Developed a facial encoding system for private-sector applications using CNN-based autoencoders and hashing methods.
- Organized and taught a deep learning workshop on computer vision for defect detection in fruits in partnership with MVISIA, reaching over 50 participants from the university community.
- Contributed to the group's Medium page, writing accessible posts on machine learning and deep learning that reached thousands of readers.

FELLOWSHIPS, AWARDS, AND HONORS

Amazon AI PhD Fellowship 2025–2027
The Amazon AI PhD fellowship is a prestigious two-year fellowship funding 100 students at nine US universities who are pursuing research on core AI disciplines such as machine learning, computer vision, and natural language processing.

London Geometry and Machine Learning (LOGML) Summer School 2025
Selected to attend and complete a research project at the intersection of geometry and machine learning at one of the leading venues for the geometric deep learning community (∼30% acceptance rate).

Acheson J. Duncan Fund Grant 2025
Research grant awarded by Johns Hopkins to support selected projects in statistics and probability ($3,450). Funds were used for traveling to India to attend ICASSP 2025.

KHIPU Participant 2023
Selected as one of the top LatinX young researchers to attend KHIPU, the Latin American Meeting in Artificial Intelligence (27% acceptance rate).

Programa de Bolsas Itaú **(PBI) Fellowship** 2021–2022
Joint fellowship between the Polytechnic School at the University of São Paulo and *Itaú-Unibanco* for top graduate students in AI-related research ($7,000).

KDMiLe Paper Award 2020
Second-best paper award at the Symposium on Knowledge Discovery, Mining, and Learning (KDMiLe).

Programa de Bolsas Itaú **(PBI) Scholarship** 2019–2020
Joint scholarship between the Polytechnic School at the University of São Paulo and *Itaú-Unibanco* for top undergraduate students in AI-related research ($5,000).

Hackathon USP Award 2019
Second place in the University of São Paulo hackathon organized by its entrepreneurship group.

SKILLS

Python, PyTorch, PyG, C/C++, LaTeX Proficient
JAX, TensorFlow, HTML, CSS, JavaScript Intermediate
English (Fluent), Portuguese (Native), French (Basic)

TEACHING EXPERIENCE

EN.553.744: Data Science Methods for Large-Scale Graphs
Johns Hopkins University Spring 2025
Head Teaching Assistant, Lecturer: Prof. Luana Ruiz

- Prepared homework assignments, graded coursework, and held office hours to support student learning.

EN.553.639: Time Series Analysis
Johns Hopkins University Spring 2024
Teaching Assistant, Lecturer: Prof. Luana Ruiz

- Graded homework and exams and held office hours to assist students with course material.

EN.553.636: Introduction to Data Science
Johns Hopkins University Fall 2023
Teaching Assistant, Lecturer: Prof. Tamás Budavári

- Prepared homework and exams, graded coursework, and led discussion sections and office hours.
- Delivered a guest lecture on logistic regression and support vector machines to over 250 students.

Colégio Objetivo **(Mogi das Cruzes, Brazil)** Apr 2016 – Aug 2017
Teaching Assistant

- Taught mathematics, physics, and chemistry to high school and preparatory course students, preparing them for competitive university entrance exams.

PROFESSIONAL SERVICE

Conference Reviewer
IEEE Signal Processing Letters (SPL) 2025
International Joint Conference on Neural Networks (IJCNN) 2025
IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2024
IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2023

Group Meetings
Jr MINDS Seminar (*Co-organizer*) 2025

VOLUNTEER WORK

Matemática em Movimento **- NGO (São Paulo, Brazil)** Dec 2016 – Aug 2017
Teaching and Education Volunteer

- Taught mathematics to low-income students and developed learning materials to support their studies.
- Designed practical math activities to integrate theory with real-world applications, incorporating economic, social, and historical contexts to broaden students' perspectives.