Brenda Nogueira

I am a Ph.D. student in Computer Science and Engineering at the University of Notre Dame and a Graduate Researcher at the NSF Center for Computer-Assisted Synthesis (C-CAS). My research focuses on Generative AI and Machine Learning Foundations, with an emphasis on learning from imbalanced data for drug discovery, treatment response, and materials science, as well as the development of agentic AI systems that enhance human trust and collaboration.

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Education

University of Notre Dame
Notre Dame, IN, US

Ph.D. in Computer Science and Engineering

Jan 2024 - Present
Advisors: Prof. Nitesh V. Chawla & Prof. Nuno Moniz

University of Porto
Porto, Porto, Portugal

Master Degree in Data Science
Sep 2022 - Dec 2024

Bachelor Degree in Mathematics with complementary education in Computer Science
Sep 2017 - Jun 2022

Honors and Awards

Scientific Artificial Intelligence Graduate Fellowship	2025
NSF Center for Computed Assisted Synthesys Travel Award	2025
International Mathematics Without Borders Olympiad Brazilian Section | Gold medal	2016

Publications

Spectral Manifold Harmonization for Graph Imbalanced Regression. Brenda Nogueira, Gabe Gomes, Meng Jiang, Nitesh V Chawla, Nuno Moniz. ICLR (under review).

Rethinking Evaluation in Compound Potency Prediction. Brenda Nogueira, Nuno Moniz, Connor W. Coley, Nitesh Chawla. JCIM (under review).

Graph-Imbalanced Regression for Rare Phenotypes. Brenda Nogueira, Nuno Moniz, Nitesh V Chawla. Book of Extended Abstracts of the 12th Iberian Conference on Pattern Recognition and Image Analysis (IbPRIA 2025).

Experiential-Informed Data Reconstruction for Fishery Sustainability and Policies in the Azores. Brenda Nogueira, Gui M. Menezes, Nuno Moniz, Rita P. Ribeiro. Discover Data, 2025.

Dynamics of Fisheries in the Azores Islands: A Network Analysis Approach. Brenda Nogueira, Ana Torres, Nuno Moniz, Gui M. Menezes. EPIA Conference on Artificial Intelligence. Cham: Springer Nature Switzerland, 2024.

Selected Presentations

Automated Fish Size Measurement System for Long-Term Growth Studies in the Azores	**ECML-PKDD** SoGOOD Workshop 2025
Spectral Manifold Harmonization for Graph Imbalanced Regression	**ICML** DIG-BUGS Workshop 2025 **KDD** MLoG-GenAI Workshop 2025
Rethinking Evaluation in Compound Potency Prediction	**NSF C-CAS annual meeting** 2025 **RISE** Conference 2025
Graph-Imbalanced Regression for Rare Phenotypes	**IBPRIA** Doctoral Consortium 2025
Dynamics of Fisheries in the Azores Islands: A Network Analysis Approach	**EPIA** Conference 2024
Data reconstruction for fisheries analysis	**IJUP** 2023
Permanent Culture Workshops	**AUGM** 2015
Culture Workshops	**IFRS-Porto Alegre Exhibition** 2015
Extending the limits of curricular teaching through artistic cultural activities	**MOEXP-IFRS** 2014
Expanding the Limits of Professional Education through Artistic-Cultural Actions	**IFRS-Bento Gonçaves Technical Exhibition** 2014
ESPANGLES/LEEME	**IFRS-Canoas Campus Science Fair** 2013

Experiences

Research Assistant | Lucy Institute for Data & Society | 01/24-Present

Exploration of Artificial Intelligence challenges in graph-structured data, with a focus on imbalanced domains and chemistry data.

Research Fellow | INESCTEC | 07/23-12/23

Research Fellow at the CIBELE Project, dedicated to devising a comprehensive strategy for unraveling the intricacies inherent in cutting patterns, while also pioneering methods to anticipate and forecast complexity within novel pattern designs.

Research Fellow | FCUP | 10/22-06/23

Development of an automated email-entity association pipeline using natural language processing, text similarity, and entity linking methods. Scholarship financed by FCT.

Research Initiation Fellow | INESCTEC | 08-09/22

Development of a methodology for filling fissing information about landings in the OKEANOS dataset using machine learning and pre-processing strategies.

Intern | INESCTEC | 03-06/22

Development of an online platform using Shiny/R for public use of the existing automated machine learning method. It also allows users to donate new datasets to improve the AutoML solution.

Intern | Ideavity | 03-06/22

Development of a sales platform and applications using Outsystems.

Intern | Evolutio | 10/21-02/22

Website creation using wagtail (based on Django). Python, HTML, and CSS were used as programming languages.

Volunteer Intern | INESCTEC | 07/21

Selection and implementation of face-based sleepiness recognition algorithms; performance evaluation (accuracy, time, complexity, etc.) on public data; app/web-based demonstrator development; performance evaluation on data acquired in real-time Python, HTML, CSS, and JavaScript are the languages used. The project is available on GitHub: https://github.com/brendacnogueira/sleep_detection_app.git

Intern | Federal Institute of Rio Grande do Sul | 2016
Internship extension at the Culture Project's Permanent Workshops: event organization, project coordination, and work presentation.

Intern | Federal Institute of Rio Grande do Sul | 2014/2015
Tutoring in mathematics, physics, biology, chemistry, accounting, and finance

Organizer

Learning on Graphs Conference (LoG) Meetup	2024
III Academic Week of the Logistics Course (FRS Canoas)	2015
IV Arte Exposition (IFRS Canoas)	2015
III Cultural Event (IFRS Canoas)	2015
II Cultural Event (IFRS Canoas)	2014
I Academic Week of the Technical Course in Administration (IFRS Canoas)	2014

Mentorship

C-CAS GUIDE Program	2025-2026
John Kim, B.E. in Computer Science & Applied Math at the University of Notre Dame.	2025-Present

Projects

Spectral Manifold Harmonization (2025)
Link: https://github.com/brendacnogueira/smh-graph-imbalance
Description: Novel approach to address imbalanced regression challenges on graph-structured data by generating synthetic graph samples that preserve topological properties while focusing on the most relevant target distribution regions.

Automated Machine Learning (2022)
Link: https://github.com/brendacnogueira/automated_machine_learning
Description: Online platform for public use of the existing automated machine learning method, developed during INECTEC intership.

Sleep Detection App (2021)
Link: https://github.com/brendacnogueira/sleep_detection_app
Description: A web application for drowsiness detection developed during summer intership at INESCTEC.