HELENA SOARES BARROS

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EDUCATION

2022-2026

B.Sc. Applied Mathematics & Computer Science

Relevant Coursework: *Mathematics & Climate, Climate Modeling, Computational Linguistics, Machine Learning, Deep Learning, Linear Algebra, Honors Statistical Inference, Operations Research, Numerical Optimization, Object-oriented Programming, Program Design with Data Structures and Algorithms*

Brown's Rhodes Scholar Global Constituency Nominee, Brown's Undergraduate Teaching and Research Award recipient

Brown University

RESEARCH & DATA ANALYSIS EXPERIENCE

Spring 2025 – Present

Using statistical and machine learning methods to analyze climate datasets, assess rainfall variability, and understand its patterns in tropical regions to prevent environmental disasters

Adapting and optimizing MATLAB rainfall-processing scripts to Python, boosting reproducibility and trimming run-time on global rainfall datasets

Expanding the analysis pipeline to examine daily rainfall cycles and classify convective weather systems

Performing literature review on climate change, land-use impacts, and extreme weather events to contextualize findings and refine analytical methods

Presented a research poster titled "Precipitation in South America" at Brown's Summer Undergraduate Research Symposium (Aug 2025)

Brown's Earth & Environmental Sciences Department, *Honors Thesis*

Fall 2023 – Present

Engineered an end-to-end Python pipeline to extract data about violent incidence events from Portuguese PDFs, reducing manual entry and expanding the dataset used to study land conflicts in Brazil, revealing an increase in violence during the 2020–2024 political cycle

Cleaned and organized data and developed an AI tool (NLP classifier) to detect land-related violence with 90% accuracy, streamlining the review of over 2,000 records and supporting research on attacks against environmental and Indigenous activists in the Amazon

Adapting to evolving research needs of 3 other team members by taking initiative to contribute to various aspects of the project such as the translation of documents to ensure the initiative's success

Democratic Erosion Lab at Brown University, *Research Assistant*

Summer 2024

Used different web development techniques to enhance website speed by 17% and optimize search engine performance

Conducted data analysis to create a comprehensive KPI dashboard to guide the firm's decisions along 20+ metrics

Conducted market analysis and benchmarking tasks to improve company's performance and strategic decision-making

Adapted to a dynamic work environment by performing tasks varying from data analysis, order fulfillment, and social media content production to achieve the team's goals and ensure smooth daily operations

Lotta Ludwigson, *Summer Intern*

Summer 2023

Analyzed complex datasets in collaboration with 6 experienced data scientists to improve machine learning models

Collaborated with business team members to problem solve and transfer conceptual strategies into applied code

Refined model granularity to increase interpretability and ensure results were actionable across business contexts

Localiza (LatAm's largest car rental company), *Special Projects Intern*

MISCELLANEOUS PROJECTS

Spring 2025

Implemented a three-box ocean model in Python to investigate nonlinear responses of the Atlantic Meridional Overturning Circulation (AMOC) to freshwater perturbations

Analyzed parameter regimes for tipping-point dynamics and compared results to recent peer-reviewed literature

Amazon River Discharge & AMOC Sensitivity, *Final Project for Mathematics & Climate class*

Spring 2025

Built a supervised ML pipeline (Random Forest, XGBoost) using meteorological and satellite data (ERA5, MODIS) to predict wildfire occurrence, cause, and burn severity

Conducted feature importance analysis to identify key drivers, aiming to reduce post-fire investigative burdens

Machine Learning for Wildfire Prediction & Assessment, *Final Project for Machine Learning for the Earth and Environment class*

Fall 2025

Reproducing and extending a Temporal Fusion Transformer (TFT) architecture (Civitarese et al., 2021) for multi-horizon forecasting

Experimenting with soil-moisture-only predictor sets and additional geographic regions to test model generalizability, with validation via quantile loss (q-risk)

Deep Learning for Extreme Precipitation Forecasting (Ongoing), *Final Project for Deep Learning class*

Fall 2025

Designing a web app integrating the Spotify API to study representation learning and user-feedback loops

Implementing iterative preference updates via like/dislike signals to evaluate embedding shifts and recommendation quality

Spotify User-Adaptive Recommendation System (Ongoing), *Final Project for Software Engineering class*

LEADERSHIP AND COMMUNITY ENGAGEMENT EXPERIENCE

Spring 2024 – Present	Leading weekly web development sessions to 20+ LatAm teens in an effort to bring more diversity to the STEM field Conducting lessons in English and Spanish to accommodate diverse language needs and ensure effective communication **Technolochicas**, *Mentor*
Spring 2023 – Fall 2025	Collaborated with Mentor Lead to manage 15 groups and 20 mentors, totalling 75 students over three semesters Developed effective strategies to encourage student participation and to foster a fun, engaging, and intellectually stimulating learning environment for under-privileged Providence students creating an entrepreneurial pitch **Young Entrepreneurs of Providence (YEP)**, *Assistant Mentor Lead*
Spring 2023 – Present	Plan and execute cultural, academic, and social events that draw 100 + attendees, strengthening the Brazilian and Portuguese-speaking community on campus Secured $1k + in funding through partnerships with Brown's Portuguese & Brazilian Studies Department and outside sponsors Launched flagship initiatives—such as a campus-wide Carnaval celebration and a screening of Ainda Estou Aqui—to foster cross-cultural engagement Oversee budgeting, logistics, and marketing for each event, ensuring inclusive, high-impact experiences that celebrate Brazilian heritage **Brazilian Students Association (BRASA)**, *Executive Board Member*
Summer 2020 – Summer 2022	Tutored individuals and groups totalling 30+ low-income students to take tests required for international study in the U.S. Organized 15+ community events to engage students and mentors while providing a supportive environment for self-discovery and discussions related to the college application process Established partnerships with major Brazilian organizations and expanded operations to six countries Led expansion and recruitment initiatives to grow the project 1500% within a year, engaging 300+ prospective international students and 2500+ followers **English101**, *Director & Co-founder*

SKILLS AND INTERESTS

Languages	Portuguese (native), Spanish (fluent, DELE C1), German (fluent), French (intermediate)
Programming	Python (advanced), Java (advanced), SQL (advanced), C (intermediate), C++ (basic)
Tools	Microsoft Office Suite (Word, Excel, PowerPoint), Google Workspace (Sheets, Docs, Slides), Pandas, NumPy, PyTorch, TensorFlow, NetCDF
Interests	Film Photography, Contemporary Art, Knitting, Running, Climbing, Brazil