

# Mariana Meireles

## Systems Engineer and AI Researcher

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### SELECTED PROFESSIONAL EXPERIENCE

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#### UNIVERSITY OF CALIFORNIA, BERKELEY

Berkeley, California, US

##### Visiting Scholar at the Center for Human-Compatible Artificial Intelligence Lab (CHAI)

APR 2025 - PRESENT

- Conducted research on Reinforcement Learning (intrinsic motivation and cooperative AI)
- First author on NeurIPS 2025 paper "[The Influence of Scaffolds on Coordination Scaling Laws in LLM Agents](#)," analyzing how role hierarchy, memory, theory of mind and task decomposition shape coordination performance in multi-agent LLM systems.
- Built Zoo, an isolated, reproducible multi-application web environment for security evaluation of LLM web agents, enabling backend ground-truth verification and deterministic resets.
  - Paper "From the Wild Web to the Zoo: A Realistic Environment for Evaluating Web Agents" accepted at MADWEB 2026 Workshop accompanying NDSS.
- Currently working on a symbolic AI solution for browser-based agents that increase model's robustness against prompt-injection, "Symbolic AI and Native Web Standards Solutions for Safe Agentic Browser". This project is a collaboration with Mozilla and generously supported by the Foresight Institute AI Safety Grant.

#### MAX PLANCK INSTITUTE FOR EVOLUTIONARY BIOLOGY

Remote, Plön, GE

##### Researcher Software Engineer

MAY 2024 - Mar 2025

- Built an LLM-FOL interface to query and reason over biological ontologies.
  - Poster: [Leveraging the Power of Complex Logical Query Answering with Natural Language](#)
- Developed a graph ontology database for biological systems by creating an unifying software to download various formats from different sources and unify them under RDF
- Participated in various events helping to create and promote FAIR standards to improve data sharing

#### UNIVERSITY OF BONN

Remote

##### Researcher at the Barfuss Lab

JAN 2024 - PRESENT

- Exploring what are the underlying factors that promote cooperation in Reinforcement Learning systems with heterogeneous agents
  - Paper in progress: [Modeling Cooperation in Heterogeneous Multi-Agent Systems](#)
- Added a heterogeneous agent functionality to the open-source [Python package on Collective Reinforcement Learning Dynamics](#) (CRLD)

#### IMPACT ACADEMY

Remote, Bangalore, IN

##### Research Fellow

OCT 2023 - Apr 2024

- Research in Cooperative AI focusing on [the interaction between super intelligent systems and humans](#)
  - Advised by Anders Sandberg and Wolfram Barfuss
- Best research award in the Impact Academy's 2024 cohort

## ANACONDA

Remote, Berlin, GE

### Software Engineer III

MAY 2022 - MAY 2023

- Engineered and improved various aspects of PyScript's API, including the output system, core Python code re-architecture, WASM integration and Python multithreading in the browser, implemented the initial testing infrastructure and several aspects of the CI system
- Led early efforts in community building for PyScript. Built bridges with external projects like JetBrains, Jupyter, Pyodide and other contributors
- Organized an international, cross-project group with 8 organizations and 20+ contributors to establish a centralized set of protocols for Python web development

## NASA

Remote

### Subject Matter Expert (Contract)

JUN 2022 - AUG 2022

- Presented the state of the art of the open science research ecosystem to the group of researchers
- [Collaborated](#) in building the chapter on the "Ethos of Open Science" for NASA's [Open Science 101 course](#)

## QUANTSTACK

Remote, Berlin, GE

### Scientific Software Engineer

FEB 2020 - APR 2022

- [Integrated the Cytoscape interactive graph](#) library into the Jupyter ecosystem as a widget. Developed [Jupyter kernels to support major SQL languages](#) and implemented data visualization capabilities for SQL query outputs within the notebook environment. Added a [new visualization mode](#) to Jupyter notebooks. Created a [deprecation finder](#) for Bloomberg software and contributed it to the Jupyter project
- Authored several aspects of the Mamba and Micromamba APIs and developed [R bindings](#), resulting in a package manager system 25x faster than CRAN. Released and maintained several different packages in the conda-forge ecosystem

## MOZILLA

Remote, Orlando, US

### Web Performance Intern

DEZ 2018 - FEB 2019

- Cut the average loading time of the [Webcompat](#) website by 35% through the implementation of server-side rendering, HTTP/2, enhanced compression algorithms, and the removal and reimplementations of libraries
- Employed Selenium-designed tests to track down some performance bottlenecks and decrease the page load time by 1s in low-speed mobile connections
- Worked on small patches for Firefox, available on my [bugzilla profile](#)

### Open Source Contributor

AUG 2018 - MAY 2019

- Added simple features to the Firefox test system
- Translated part of The Rust Book and workshop materials
- Promoted and organized Rust events in the Brazilian Rust community

## AWARDS & GRANTS

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|---|-------------|
| • <a href="#">“Jupyter Distinguished Contributor”</a> award | 2022        |
| • Impact Academy Award for best research project            | 2024        |
| • Foresight Institute’s AI Safety Grant                     | 2025 - 2026 |

## INVITED TALKS AND WORKSHOPS

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- MADWEB 2026 (Workshop accompanying NDSS): From the Wild Web to the Zoo: A Realistic Environment for Evaluating Web Agents
  - NeurIPS 2025 Scaling Environments for Agents Workshop: [The Influence of Scaffolds on Coordination Scaling Laws in LLM Agents](#)
  - NeurIPS 2025 Multi-Turn Interactions in Large Language Models Workshop: [The Influence of Scaffolds on Coordination Scaling Laws in LLM Agents](#)
  - CooperativeAI Summer School 2025: [The effects of heterogeneity in LLM cooperation](#)
  - Biohackathon Germany 2024: [Increasing Interoperability of Bioimage Dataset Resources](#)
  - Max Planck Institute Carpentries 2024: Workshop: [Research and Data Management 2024](#)
  - Knowledge Graph Summer School 2024: [Poster: Leveraging the Power of Complex Logical Query Answering with Natural Language](#)
  - CooperativeAI Summer School 2024, Machine + Behavior 2024, ELLIS CoGenAI Summer School 2024: [Poster: Learning to Cooperate With Intelligence Inequality: A Complexity Science Exploration](#)
  - Impact Academy Summit 2024: [Talk: Understanding Machine and Human Cooperation](#)
  - PythonPizza Hamburg 2024: [Talk: How to Build a Universe From Scratch](#)
  - WCC Summer School 2023: [Workshop: Environments and Packaging](#)
  - WCC Summer School 2023: [Workshop: Pytest + Github Actions: How to Set Up an Environment](#)
  - WCC Summer School 2023: [Workshop: Python Packaging: How to Release Your Own Python Package in Pypi and Conda](#)
  - Women of Code Summer School 2023: [Workshop: Thoughts on Software Engineering: Software Design and Architecture](#)
  - PyLadies Berlin 2023: [Talk: Jupyter Internals: Jupyter's Implementation Details and How to Contribute](#)
  - Scipy 2022: [Tutorial: Ipywidgets](#)
  - WCC Summer School 2022: [Workshop: Introduction to Qt for Python](#)
  - WCC Summer School 2022: [Tutorial: The Git Survival Guide: Basic to Advanced Git](#)
  - Scipy 2021: [Tutorial: Ipywidgets](#)
  - PyCon Brasil 2021: [Talk: As Luas de Jupyter](#)
  - WCC Summer School 2021: [Tutorial: How to Build Your Academic Website Profile](#)
  - QtCon Brasil 2020: [Talk: Uma Introdução a PySide](#)
  - JupyterCon 2020: [Talk: Ipycytoscape: An Interactive Graph Library for Jupyter](#)
  - JupyterCon 2020: [Talk: Xeus: Multiple Languages Within Jupyter](#)
  - JupyterCon 2020: [Talk: Memestra: A Deprecation Warning Tool](#)
  - QtCon 2020: [Talk: Leveraging DeepLearning with PySide](#)
  - Universidade Federal de Minas Gerais Summer School 2020: [Tutorial: Guia de Sobrevivência Git](#)

## OPEN SCIENCE COMMUNITY SERVICES

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- **Max Planck Institute Open Science Ambassador (2023-2024):** A community of researchers committed to promoting transparency, reproducibility and collaboration in science.

- **Open Knowledge Foundation [Expert](#)** (2023 - Present): Offering workshops, delivering talks and mentoring people into the open movement.
- **Internet Society Member** (2023 - Present): Brazilian Chapter, [Rural Development Community and Affordable Internet Access SIG](#).
- **Women of Color Code Organizer** (2021 - 2024): Software mentor and co-organizer. The project seeks to unite members of minoritized groups in educational institutions and industry settings. Here I have delivered several software and open science classes to graduate students of various backgrounds.
- **PyLadies Berlin Organizer** (2018 - 2024): Organizer of PyLadies Berlin, facilitating [workshops and talks](#). Organizer of the Machine Learning Group for 6 months in which I held weekly meetings to teach and learn ML.
- **DISC NumFOCUS Steering Council Member** (2022 - 2024): Responsible for organizing the NumFOCUS Unconference 2023, updating the NumFOCUS DISCOVER [Cookbook](#) and [developing integration programs](#) aimed at enabling participation from individuals of underprivileged communities into the open science ecosystem.
- **Jupyter Widgets Committee Member** (2022 - 2024): Community maintenance and governance stewardship.

## LECTURES

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- **NASA** (2023): Open science [EDx class](#)
- **Guest Lecturer by the LSSTC-DSFP at Harvard** (2022): [Instructed graduate students in Astronomy](#) on topics such as Object-Oriented Programming (OOP), performance optimization for scientific software, as well as open science and reproducible research practices.

## MENTORSHIP

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- **Open Life Science Mentor** (2023): [Mentored](#) undergraduate computer scientist in the development of a program designed to integrate young research software engineers into the field. This project was then integrated with the UK-RSE organization.

## ACADEMIC SERVICES

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- US-RSE 2024 Reviewer
- NeurIPS 2024 Workshop Reviewer

## EDUCATION

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### MACHINE LEARNING FOR GOOD

Topics covered: mechanistic interpretability, AI governance, Reinforcement Learning

Gnevkw, GE

SEP 2024 - OCT 2024

### CAMBRIDGE AI SAFETY HUB

*Cambridge Machine Learning for Alignment Bootcamp*

Topics covered: einops, CNNs, ResNets, Variational Autoencoders, Transformers from Scratch, Mechanistic Interpretability, Reinforcement Learning and RLHF

Cambridge, UK

APR 2024 - APR 2024

### SANTA FE INSTITUTE

*Santa Fé Institute - Complexity Interactive*

Short abstract: [How Does Polarization and Inequality Scale with Spatial and Population Size](#)

Remote

OCT 2023 - Nov 2023

### RECURSE CENTER

Complex systems and LLM ABM [software projects](#)

New York City, US

JUN 2023 - SEP 2023

MIT

*Micro Masters Program in Data, Economics and Development Policy*

Remote

MAY 2023

UNIVERSIDADE FEDERAL DE MINAS GERAIS

*Bachelor of Engineering, Major in Electrical Engineering; Minor in Computer Science (Incomplete)*

Belo Horizonte, BR

2015 - 2018

## VOLUNTARY WORK

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- **DoeBem Researcher (2023):** Contributed research for DoeBem (a Brazil-focused charity evaluator similar to GiveWell), helping author an analysis identifying priority needs for communities experiencing food insecurity specific to one of Brazil's poorest areas.
- **Women in Engineering and Computer Science groups (Co-organizer 2018 - 2024):** PyLadies Berlin and Women of Color Code
- **Engenharia Solidária (University Volunteer Group 2015 - 2017):** Supported community-impact initiatives, including coordinating donations of food and warm clothing, organizing visits to nursing homes and orphanages, and helping develop STEM outreach programs to encourage girls and teenagers to pursue technical careers.
- **Sétima Armada Board Game Club (Co-organizer, 2012 - 2014):** Co-organized one of Brazil's largest board game clubs and hosted events in favela cultural centers; in partnership with educators, used games to teach skills such as patience, collaboration, and strategic thinking.