

# Mariana Meireles

## Systems Engineer and Cooperative AI Researcher

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### PROFESSIONAL EXPERIENCE

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#### MAX PLANCK INSTITUTE FOR EVOLUTIONARY BIOLOGY

Remote, Plön, GE

##### Researcher Software Engineer

MAY 2024 - PRESENT

- Create a [LLM interface to interact with the ontologies using FOL](#)
- Develop a graph ontology database for biological systems by creating an unifying software to download various formats from different sources and unify them under the RDF
- Apply [Graph Neural Net algorithms to extract insights from ontological data](#)
- Create FAIR standards to improve data sharing
- Collaborate in ongoing theoretical evolutionary biology research at the institute

#### BARFUSS LAB, UNIVERSITY OF BONN

Remote

##### Researcher

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](#)
- Maintaining the open-source [Python package on Collective Reinforcement Learning Dynamics](#) (CRLD)

#### IMPACT ACADEMY

Remote, Bangalore, IN

##### Research Fellow

OCT 2023 - Apr 2023

- Researching Cooperative AI and AI Alignment

#### RADAR

Remote

##### Generative AI and Alignment Research Engineer (Contract)

SEP 2023 - Nov 2023

- RADAR is a research collective that is looking into ways of democratizing research. I have collaborated on a research report that explores the implications of artificial intelligence on our future
- Developing an Open Source [Framework](#) for Aligning LLMs

#### 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, Pydide 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 2023**

- 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

**THE QT COMPANY****Berlin, GE****Desktop GUI Software Engineer (Contract)****SEP 2019 - DEC 2019**

- Responsible for maintaining and building new features for PySide (the Python bindings for Qt)
- Added support functionalities for PySide on Qt Creator
- Developed a [voice and text assistant](#) for the Berlin Qt Conference 2019

**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

**CLOUDIA****Belo Horizonte, BR****Full Stack Developer****JUL 2018 - OCT 2018**

- Integrated the company's chatbot system with the official Whatsapp API and several unofficial APIs
- Added new functionalities to the chatbot
- Designed and implemented a metrics dashboard
- Created API endpoints to add new features to the dashboard system

**COMPUTER SCIENCE DEP. - UFMG****Belo Horizonte, BR****Undergraduate Researcher****MAR 2018 - JUN 2018**

- Collaborated with Dr. Flavio Figueiredo to investigate potential correlations between language use and gender using NLP and big data analytics

## EDUCATION

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### MACHINE LEARNING FOR GOOD

Topics covered: mechanistic interpretability

Gnevkow, 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

### BLUE IMPACT

*AI Safety Fundamentals*

Remote

MAR 2024 - MAY 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 - HIATUS

### UNIVERSIDADE FEDERAL DE MINAS GERAIS

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

Belo Horizonte, BR

2015 - 2018

## AWARDS

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- “[Jupyter Distinguished Contributor](#)” award 2022
- Impact Academy Prize for best research project 2024

## OPEN SCIENCE COMMUNITY SERVICES

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- **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 - Present): 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 - Present): 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.

## INVITED TALKS AND WORKSHOPS

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- 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](#)

## 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](#) an undergraduate computer scientist in the development of a program designed to integrate young research software engineers into the field. This project is affiliated with UK-RSE.

## ACADEMIC SERVICES

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- US-RSE 2024 Reviewer

## VOLUNTARY WORK

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- **DoeBem researcher:** DoeBem is the equivalent to GiveWell in Brazil. I helped them to write an analysis specifying what are the specific needs of people living with food insecurity.

