

# PAULO BRUNO SERAFIM

Conversational XAI Researcher | PhD Student @ GSSI

I am a PhD student working with Conversational Explainable AI, and with 5 years of experience in industry. Throughout my involvement in different projects, I have become a person who loves to solve challenging problems using my creativity, developing novel solutions to relevant and nontrivial tasks through innovation.

## EDUCATION

### PhD - Computer Science Nov/2022-Today

*Gran Sasso Science Institute (GSSI)*

Research on Conversational Explainable AI (XAI) through the use of Large Language Models.

### MSc - Computer Science Mar/2016-Apr/2018

*Federal University of Ceará (UFC)*

Thesis: *Evaluating competition in training of Deep Reinforcement Learning agents in First-Person Shooter games (in Portuguese)*

### BSc - Computer Science Jan/2013-Dec/2015

*Federal University of Ceará (UFC)*

*Magna Cum Laude degree*

## SKILLS

### Python 9 years

*Numpy, Scikit, Pandas, Matplotlib, Ollama*

### C/C++ 8 years

*Data-Oriented and Object-Oriented C/C++*

### Explainable AI 5 years

*OmniXAI, XRL, Natural Language Explanations*

### Large Language Models 3 years

*GPT (OpenAI API), Gemini, Llama 2*

### Deep Learning 6 years

*TensorFlow and Keras in Python*

### Reinforcement Learning 8 years

*Deep Q-Networks and Policy Gradients*

## LANGUAGES

 Native Speaker

 Full Professional Proficiency

 Professional Working Proficiency

 Elementary Proficiency

## SOCIAL

 paulobruno.github.io

 linkedin.com/in/pbserafim

 github.com/paulobruno

 orcid.org/0000-0002-5980-8149

## EXPERIENCE

### PhD Student

**Nov. 2022 - Oct. 2026**

*Gran Sasso Science Institute*

Research on Human-Centred Conversational Explainable AI, building tools to explain Machine Learning decisions for non-technical users. Explored the capabilities of LLMs to explain Decision Tree classifications (HHAI 2024). Developed a multi-agent architecture for generating simplified explanations for any tabular classifier (ECML PKDD 2025).

### Research Engineer

**Apr. 2022 - Oct. 2022**

*INRIA Sophia Antipolis*

Implemented a novel Locality-Sensitive Hashing algorithm developed in the group, performed benchmarks, and wrote reports of experiments on Machine Learning datasets. Started development of an internal package for Neural Network pruning. Lead programmer of WorldDynamics.jl, an open-source framework for world dynamics modeling and simulation written in Julia.

### Senior Data Scientist

**May 2021 - Mar. 2022**

*Instituto Atlântico*

Tech Lead of the Data Science branch of an R&D project for Dell EMC. I have worked with anomaly detection using unsupervised learning methods, classification using supervised learning methods, and development of BI dashboards to assist tactical and operational decision-making. Responsible for writing and presenting technical reports to Dell EMC managers.

### Computer Vision Engineer

**Sep. 2020 - Apr. 2021**

*Instituto Atlântico*

Worked on an R&D Computer Vision project for HP Inc., applying Deep Learning for human segmentation and image matting using TensorFlow. Worked on OCR methods applied to printed text documents. Developed a synthetic document generator using OpenCV. Co-leader of the Cognitive Computing study group, focused on CV, Image Processing, and RL.

## SELECTED PUBLICATIONS

### MAINLE: a Multi-Agent, Interactive, Natural Language Local Explainer of Classification Tasks Sep. 2025

*ECML PKDD Research Track*

Paulo Serafim, Rômulo Férrer, Stenio Freitas, Gizem Gezici, Fosca Giannotti, Franco Raimondi, Alexandre Santos

### Exploring Large Language Models Capabilities to Explain Decision Trees

Jun. 2024

*Hybrid Human AI Systems for the Social Good (HHAI)*

Paulo Serafim, Pierluigi Crescenzi, Gizem Gezici, Eleonora Cappuccio, Salvatore Rinzivillo, Fosca Giannotti

### Generating Supports

Nov. 2019

*Patent WO2021107916A1*

Jun Zeng, Paulo Bruno Serafim, Alyne Gomes Soares Cantal