

Pedro Maciel Xavier

EDUCATION

M.Sc., Systems Engineering and Computer Science

PESC - COPPE/UFRJ - Optimization

Advisors: Nelson Maculan & David E. Bernal Neira

GPA: 2.88 / 3

B.Sc., Computer and Information Engineering

Polytechnic School - POLI/UFRJ

Thesis: SATyrus III: Generation of Computable Specifications

Advisor: Priscila Machado Vieira Lima

GPA: 7.9 / 10

B.Sc., Mathematics (double major)

Institute of Mathematics - IM/UFRJ

GPA: 7.9 / 10

PROFESSIONAL EXPERIENCE

Visiting Scholar

Purdue University — full-time

Quantum Optimization • Disjunctive Programming • Mathematical Modeling • Open-source Development • Process Systems Engineering

Researcher & Developer

PSR Energy — full-time

Operations Research • Stochastic Optimization • Mathematical Modeling • Software Engineering • Open-source Development • Quantum Optimization • Innovation • Power Systems Analysis

Research & Development Intern

PSR Energy — part-time

RESEARCH

Optimization & Quantum Computing

Final Project - LAM - PESC-COPPE/UFRJ

Development of a SAT-like compiler for Quantum Optimization architectures.

Generative & Parametric Design

Undergraduate Research - LAMO - FAU/UFRJ

Prepare course on Programming and Generative Design techniques for Architecture & Urbanism.

Weightless Neural Networks

Undergraduate Research - LAM - PESC-COPPE/UFRJ

Development of nonlinear encoding schemes for applications in High Energy Physics (HEP).

Weightless Neural Networks

Undergraduate Research - NCE/UFRJ

Jun. 2022 - Jul. 2024

Rio de Janeiro, RJ

Apr. 2016 - Nov. 2022

Rio de Janeiro, RJ

Jul. 2017 - Nov. 2020

Rio de Janeiro, RJ

Aug. 2023 - Dec. 2023

West Lafayette, IN - USA

Mar. 2023 - present

Rio de Janeiro, RJ

Nov. 2021 - Feb. 2023

Rio de Janeiro, RJ

Jan. 2020 - Aug. 2022

Rio de Janeiro, RJ

Mar. 2020 - Jun. 2021

Rio de Janeiro, RJ

Jan. 2019 - Dec. 2019

Rio de Janeiro, RJ

Jan. 2017 - Dec. 2018

Rio de Janeiro, RJ

CONTACT

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🔗 pedromxavier.github.io

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LANGUAGES

🇧🇷 Native

🇬🇧 Fluent

🇪🇸 Intermediate

🇩🇪 Basic

TOOLS

↔ Julia

↔ Python

↔ Fortran

↔ C/C++

↔ Git

↔ \TeX , \LaTeX

↔ Rhinoceros

↔ AutoCAD

↔ Revit

REFERENCE



CAPES program against Zika Virus

Jul. 2017 - Jun 2018

Undergraduate Research - IFF/FIOCRUZ

Rio de Janeiro, RJ

Developed clinical research forms and electronic medical record system with SQL database and Web interface.

PUBLICATIONS

QUBO.jl: A Julia Ecosystem for Quadratic Unconstrained Binary Optimization

arXiv preprint

Research Article

2023

Computation for Architecture, hybrid visual and textual language: Research developments and considerations about the implementation of structural imperative and object-oriented paradigms

International Journal of Architectural Computing (IJAC)

Research Article

2022

Detection of elementary particles with the WiSARD n-tuple classifier

28th European Symposium on Artificial Neural Networks (ESANN)

Conference

Bruges, Belgium

Oct. 2 - 4, 2020

EVENTS

CQ&OR22 – Workshop on Quantum Computing and Operations Research

Fields Institute

Presentation

Toronto, ON

13 - 14 Oct. 2022

↔ JuMP To QUBO Automatic Reformulation

XXV SIGraDi International Conference 2021

Sociedade Ibero-Americana de Gráfica Digital

Presentation

8 - 12 Nov. 2021

↔ Designing Learning Methods: Programming with Visual and Textual Language in Python

AcademyHack Ambev

Ambev Tech, AB Inbev

Hackathon

Nov. 2021

↔ Ambev Ambassador, participant in a series of mentorships in communication and leadership.

↔ Student responsible for interaction with the university and advisor to one of the winning teams.

JICTAC UFRJ 2020

Federal University of Rio de Janeiro

Presentation

Rio de Janeiro, RJ

2020

↔ *Best work*: Elementary particle detection with Weightless Neural Networks.

↔ Content development for programming course applied to Architecture.

Vacathon Ideas for Milk 2019

EMBRAPA Dairy Cattle

Hackathon Juiz de Fora, MG 28 Oct. - 1 Nov. 2019

→ UFRJ representative in the competition.

JICTAC UFRJ 2018

Federal University of Rio de Janeiro

Presentation Rio de Janeiro, RJ 2018

→ *Honorable Mention*: The Neural Model without WiSARD weights in the classification of elementary particles.

→ *Honorable Mention*: Reducing Inequalities with training workshops for the Brazilian Mathematics Olympiad for Public Schools.

LNCC Summer Program 2018

National Laboratory of Scientific Computing (LNCC)

Mini-courses Petrópolis, RJ 5 - 8 Mar. 2018

→ Data Analysis

→ Oncoimmunology

→ Modeling of Biological Systems

→ Computational Fluid Animation

TEACHING

TA

Graduate courses 2020-2022 Rio de Janeiro, RJ

→ Optimization for Data Science (lato sensu) IM/UFRJ

→ Weightless Neural Networks PESC - COPPE/UFRJ

→ Computer Graphics PESC - COPPE/UFRJ

TA

Undergraduate courses 2018-2021 Rio de Janeiro, RJ

→ Mathematical Optimization POLI/UFRJ

→ Computer Graphics POLI/UFRJ

→ Data Structures POLI/UFRJ

→ Programming for Architecture FAU/UFRJ

→ Calculus IM/UFRJ

→ Programming Languages POLI/UFRJ

→ Programming II POLI/UFRJ

→ Programming I POLI/UFRJ