

# Alexandre Mascarenhas

MAINTENANCE TECHNICIAN · ELECTRONICS · MASTERS STUDENT

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## Personal Profile

Hello! I am Alexandre Mascarenhas, I am 27 and I'm from Brazil. Currently I am working as a maintenance technician at Sao Paulo Metro and as a Research Assistant at Sony Computer Science Laboratories and University of Tsukuba. As a master's degree student in Computer science at the University of Tsukuba in Japan under the supervision of Professor Claus Aranha, my research interests are in the field of: evolutionary computation, artificial intelligence, neuroscience and public transport systems.

## Education

### University of Tsukuba

Tsukuba, Japan

MSc. in Computer Science

Apr 2022 - Current

- **Courses:** Data analysis, Data engineering, Programming environment, Principles of Software Engineering, Topics in Computational Science I, Adaptive Media Processing, Experiment Design in Computer Sciences, Frontier Informatics A and B, Basic Computational Biology

### Cruzeiro do Sul University

Sao Paulo, Brazil

BSc. in Electrical and Electronic Engineering

Feb 2019 - Jun 2022

- **Courses:** General electronics, Electricity, Instrumentation, Digital Electronics, Industrial Electronics, Principles of Telecommunications, Microprocessors, Resistance of materials I and II, Systems integration, Transformers and electrical machines, Programming paradigms

### University of Sao Paulo

Sao Paulo, Brazil

BSc. in Physics

Mar 2015 - Dec 2021

- **Courses:** Physics I - V, Experimental Physics I - V, Quantum Physics, Electromagnetism I and II, Thermodynamics, General Relativity and Astrophysical Applications, Statistical Mechanics, Differential and Integral Calculus I - IV, Linear Algebra I, Vectors and Geometry, Introduction to Ordinary Differential Equations and Applications, Introduction to Probability and Statistics I, Artificial Intelligence, Introduction to Computing for Exact sciences and Technology, Introduction to Computational Physics I and II, Numerical Calculus with Applications to Physics

### SENAI Roberto Simonsen

Sao Paulo, Brazil

Electronic Technician and Maintenance Electrician

Jun 2011 - Jun 2015

- **Courses:** Electrical installations, Analog Electronics, Digital electronics, Analysis of electronic Circuits, Power electronics, Technical design, Microcontrollers, Electronic equipment maintenance

## Work Experience

### Sony Computer Science Labs Inc.

Kyoto, Japan

Research Assistant - Software/Hardware Engineering

Feb 2023 - Current

- In charge of developing the firmware and hardware of a device related to Covid 19.
- **Technical Skills:** Python (numpy, pandas, tkinter, pytorch, tensorflow), Git, Hardware development, Embedded linux, ARM 64

### University of Tsukuba

Tsukuba, Japan

Research Assistant - Computer Vision

Oct 2022 - Current

- The research uses neural networks (Unet) and subsequent data processing on digital raw images in order to estimate some characteristics and determine rates of plant growth.
- **Technical Skills:** U-net CNN, Python with Genetic Algorithm (NumPy, Pandas, opencv) and Git

### São Paulo Metropolitan Company

Urban railways that operate in the city of Sao Paulo

Sao Paulo, Brazil

Maintenance Technician - Paused for Master's

Oct 2017 - Current

- Development of asset monitoring systems, Hardware/Software for embedded systems(Microcontrollers and Linux Processors), with sending to a database for further analysis and predictive maintenance
- My team and I developed a data acquirer (hardware and software) capable of acquiring data from assets in the field, analyzing them locally and sending the information to a central server
- We achieved a considerable decrease in failures (around 39%) with predictive maintenance
- **Technical Skills:** Maintenance of electronic assets, Python with Pandas, NumPy, Matplotlib, Scikit-learn, C/C++, Linux for ARM, Git and Zabbix
- **Soft Skills:** Teamwork, Time Management, Communication and Presentation skills.

### Meu Web Gestor

Services provision in Business Management

Sao Paulo, Brazil

Front-end Developer

Jul 2013 - Feb 2014

- Website and Software Development for business management
- **Technical Skills:** HTML/CSS, Javascript and PHP

# University Projects

## Laboratory Assistant

University of Sao Paulo - Institute of International Relations

- Managed the use of computers and assisted students in the use of software and resources related to basic computational tasks
- Maintenance of hardware

Sao Paulo, Brazil

Aug 2017 - Nov 2017

## Laboratory Assistant at INOVALAB@POLI

University of Sao Paulo - Polytechnical School

Supervisor: Prof. Dr. Roseli de Deus Lopes

- Assisted undergraduated and graduated students in the use of machines, equipments and tools in the Prototyping Laboratory (CITI), mainly in tasks related to electronics and programming

Sep 2016 - Mar 2017

## Laboratory Assistant at Demonstration Lab

University of Sao Paulo - Institute of Physics

Supervisor: Prof. Dr. Mikiya Muramatsu

- Maintained the experiments of the Demonstration Laboratory and proposed and set up new experiments

Sao Paulo, Brazil

Aug 2015 - Jul 2016

## New Modules for Toroidal Nuclear Reactor System Trigger Control at Tokamak TCA-BR

University of Sao Paulo - Institute of Physics

Supervisor: Prof. Dr. Ricardo Magnus Osorio Galvão

- Modernization of the Toroidal Magnetic Field Trigger of the Nuclear Fusion Reactor TCABR of the University of Sao Paulo. The project aimed at replacing the old magnetic field trigger board of the reactor that used analog electronics systems, with a microcontrolled system with remote access via internet, using both Arduino and its modules. The project included everything from the elaboration of the circuits, through the programming of the software and the prototype of the electronic board, following the test of the system

Sao Paulo, Brazil

Jun 2015 - Jun 2016

## WorldSkills Trainnig

SENAI Roberto Simonsen

- **HARDWARE** - Development of hardware to solve problem situations. Elaboration of the circuit, which could be Analog, Digital or Microprocessed, simulation in software (usually PROTEUS), design and manufacture of the electronic boards responsible for carrying out the task
- **SOFTWARE** - Development of software for microcontrollers in C, C++ and/or Assembly languages
- **MEASURES AND REPAIRS** - Detection of defects, consequently, repair of available hardware and subsequently performed measurements according to hardware manuals and documents
- **ASSEMBLY** - Mechanical and electronic assembly of devices made available with manuals and documents

Sao Paulo, Brazil

Jun 2011 - Jun 2016

# Skills

## Computation

- **Programming:** C/C++, Python (Pd, Np, Scikit-learn, OpenCV, Matplotlib, Bokeh, Deap), Assembly, HTML/CSS, JavaScript
- **Hardware:** Assembly and Maintenance
- **Tools:** Linux, Windows, Bash,  $\text{\LaTeX}$ (Overleaf/R Markdown), Git, Anaconda, MATLAB, Libreoffice, Docker,

## Electronics

- **Hardware:** Design, Test, Assembly and Maintenance of PCBs, ARM, Mirocontrollers, Power drivers
- **Circuits:** Projects, Design and Development
- **Tools:** Proteus, Eagle, CadSIM

# Achievements

2013 **Bronze Medalist**, Brazilian Public Schools Mathematics Olympiad (OBMEP)

Brazil

2015 **Excellence Medalist**, Industrial Electronics at the WorldSkills competition

Brazil

# Interests

## Democratization of knowledge

I like everything related to Free Software and Open Science and other things capable of making this a reality

## Video Games

Mainly the "old" ones (very relative lol), like PS2 :)

## Sports

Mainly skateboarding, soccer and bike

# Languages

## English

Professional proficiency

## Spanish

Basic proficiency

## Portuguese

Native proficiency

References available upon request.