# Mathias Scroccaro Costa

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http://www.mathias.dev.br/previous_work

## Summary

I am a software engineer with solid experience in Python programming language. My main expertise is in the development of backend applications, involving serving IoT data through REST API interfaces, communication with radio modules, database queries and data processing. For me, writing high quality testable code isn't just a technical goal, but the right path for dev teams to keep a consistent productivity and mental health updated.

I also have experience with analog and digital electronic circuits design (PCB level) and firmware development for microcontrollers, which I mainly aquired from my Grad and Postgrad studies in Electronics Engineer.

Technologies that I am currently working with: Python, Flask, SQLAlchemy, Docker and Postgres.

Linux enthusiast since 2014.

Check out my portfolio at http://www.mathias.dev.br/previous_work

## Experience

### Software Engineer

Instituto de Pesquisas Eldorado

Nov 2021 - Present (6 months +)

- Designed the Backend Architectures for IoT applications, constantly doing technical decisions regarding the tech stack and design patterns;

- Developed applications from scratch with Python Flask library;

- Designed and migrated Backend services to Docker containers;

- Started to implement Clean Code practices and TDD methodology, archiving almost full test coverage in written codes;

- Modeled the data struct of IoT applications, which were integrated with databases such as MongoDB and Postgres.

### Doctoral Fellow

Instituto de Pesquisas Eldorado

Nov 2020 - Oct 2021 (1 year)

- Had experience with software auditing process, implementing changes compatible with PEP8 style guides;

- Developed UI interfaces for a server application (with PyQT5);

- Developed UI interfaces for an embedded Linux platform (initially direct through framebuffer with C++ language and later with PyQT5);

- Built a Python library for Wi-SUN FAN and HAN radio modules;

### Doctoral Fellow
Universidade Estadual de Campinas
Jul 2020 - Oct 2021 (1 year 4 months)
- I studied postgraduate courses on digital signal processing, switching power devices, sensor signal conditioning, CMOS devices fabrication, radiofrequency waveguides and circuits;

- Simulated switching circuits with PSIM and PSPICE simulators;

- As teacher's assistant, designed all laboratory scripts and autonomously conducted a basic electronics course for undergraduate students, who built a circuit for generating and processing ECG signals.

### MSc Student
Universidade Estadual de Campinas
Jul 2017 - Jul 2020 (3 years 1 month)
- Projected and built circuits schematics and layouts with Kicad EDA tool;

- Manually manufactured Printed Circuits Boards, including copper etching and soldering SMD components;

- Built an application for GPIB instruments control, such as HP/Agilent 3245A Universal Source and HP/Agilent 3458A multimeter;

- Made the hardware and firmware design (PCB level) of a low-power IoT device for water flux metering, using NRF51822 uC and Bluetooth wireless connection;

### Firmware Developer
Antares Unicamp
Jun 2019 - Jul 2019 (2 months)
- Developed a firmware for STM32 microcontroller, responsible for the sun position detection algorithm in a Cubesat.

## Education

### Universidade Estadual de Campinas
Doctor of Philosophy - PhD
2020 - 2024

### Universidade Estadual de Campinas
Master's of Electric Engineering, electronics, microelectronics and photonics
2017 - 2020

**Federal University of Technology - Parana**
Bachelor of Engineering - BE, Electronics Engineering
2013 - 2017