SKILLS PORTFOLIO

Software Development Engineer

Scientific & Industrial Applications



Fidel Rodrigues Monteiro

Python | C/C++ | Scientific Software | Systems Integration | Applied AI

7+	5	3	3
Years of experience	Professional roles	Degrees & certifications	Working languages

LOCATION
Lyon, France

GEOGRAPHIC MOBILITY
Metropolitan France

AVAILABILITY
Immediate

PORTFOLIO
www.fidelmonteiro.com

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01 Professional profile

Software engineer based in Lyon, developing Python and C/C++ solutions for experimental data processing, automation and technical systems.

My work at SuperGrid Institute, STMicroelectronics, Hyperion Seven and Akkodis connects scientific software, electronic simulation, embedded systems and software platforms. Artificial intelligence is one of my application domains.

The common thread of my assignments is industrialization: turning processing code or prototypes into reliable, automated tools: a scientific post-processing pipeline, CI/CD pipelines for models, a dataset management tool, automated simulation campaigns.

My recent education at EPSI focuses on computer science and information systems.

LOCATION
Lyon, France

EXPERIENCE
Since 2019 (internship included)

LANGUAGES
Portuguese (native), French (fluent), English (professional)

GEOGRAPHIC MOBILITY
Metropolitan France

AVAILABILITY
Immediate

DOMAINS
Software Engineering, Scientific Software, Embedded Systems, DevOps & Cloud, Applied AI & MLOps, Computer Vision

02 Technical skills

Software Engineering

Python and C/C++ development, web platforms and APIs, databases, architecture design and industrialization of existing processing code.

USED PROFESSIONALLY

Python	Akkodis · SuperGrid Institute · Hyperion Seven · STMicroelectronics (AI Engineer) · STMicroelectronics (Software Developer Intern)
C/C++	Hyperion Seven · SuperGrid Institute · STMicroelectronics (Software Developer Intern)
FastAPI	Akkodis (ADIAB) · SuperGrid Institute
Streamlit	Akkodis (OASIS)
SQLite	Akkodis (ADIAB)
Next.js	Akkodis (ADIAB)
Software architecture	Akkodis (OASIS)
TypeScript	Akkodis (ADIAB)
Tkinter	SuperGrid Institute
Flask	Hyperion Seven

USED IN PERSONAL PROJECTS

Rust	Banzami
Go	Banzami
Next.js	Doa
Supabase	Doa
PostgreSQL	Doa

Target roles: Software Development Engineer, Backend Software Engineer, Embedded Software Engineer, Scientific Software Engineer, Industrial Software Engineer, R&D Software Engineer

Scientific Software

Experimental data post-processing, spectral analysis, calibration, and automation of simulations and tests.

USED PROFESSIONALLY

Experimental data processing	SuperGrid Institute
Spectral analysis	SuperGrid Institute
Calibration	SuperGrid Institute
CMOS simulation	STMicroelectronics (Software Developer Intern)
Test automation	STMicroelectronics (Software Developer Intern)

Target roles: Scientific Software Engineer, R&D Software Engineer

Embedded Systems

Embedded C/C++ software on embedded Linux, CAN bus and UART links, hardware/software integration and field testing; hardware design (TPU/ASIC, FPGA).

USED PROFESSIONALLY

C/C++	Hyperion Seven · SuperGrid Institute
Embedded Linux	Hyperion Seven
CAN	Hyperion Seven
UART	Hyperion Seven
Hardware/software integration	Hyperion Seven
TPU/ASIC	STMicroelectronics (AI Engineer)
FPGA	STMicroelectronics (AI Engineer)
ESP32	Hyperion Seven
LoRa	Hyperion Seven
Wi-Fi	Hyperion Seven
Arduino	Hyperion Seven · SuperGrid Institute
Raspberry Pi	Hyperion Seven

Target roles: Embedded Software Engineer, Industrial Software Engineer

DevOps & Cloud

CI/CD pipelines, containerization and Azure cloud for applications and AI models; Linux environments.

USED PROFESSIONALLY

Docker	Akkodis
Azure	Akkodis (AQUA-IA)
GitHub Actions	Akkodis (AQUA-IA)
CI/CD	Akkodis (AQUA-IA)
Linux	Hyperion Seven
Git	SuperGrid Institute
GitHub	SuperGrid Institute

USED IN PERSONAL PROJECTS

Vercel	
Cloudflare	
Jenkins	EPSI

Target roles: MLOps Engineer, Software Development Engineer, Backend Software Engineer

Applied AI & MLOps

Model integration, industrialization (CI/CD) and training-data tooling, with hardware-side experience in accelerating machine-learning computation.

USED PROFESSIONALLY

Python	Akkodis · SuperGrid Institute · Hyperion Seven · STMicroelectronics (AI Engineer) · STMicroelectronics (Software Developer Intern)
TensorFlow	STMicroelectronics (AI Engineer)
MLOps	Akkodis
ML framework integration	STMicroelectronics (AI Engineer)
Dataset management	Akkodis (ADIAB)
LLM	Akkodis (OASIS)
PyTorch	Akkodis (AQUA-IA)

USED IN PERSONAL PROJECTS

LLM	BANZA
RAG	BANZA
Qwen	BANZA
DeepSeek	BANZA

Target roles: AI Engineer, MLOps Engineer

Computer Vision

Image detection and classification models for monitoring aquatic species, and preparation of the related datasets.

USED PROFESSIONALLY

YOLO	Akkodis (AQUA-IA)
OpenCV	Akkodis (AQUA-IA)
Image classification	Akkodis (AQUA-IA)

Target roles: AI Engineer

OTHER DECLARED TECHNOLOGIES

Technologies listed in my background, without detailed context in this portfolio.

SQL · PyQt · Qt · Flutter · MQTT · ROS · Kubernetes · Scikit-learn · MNIST

03 Professional experience

AI / MLOps Development Engineer · Akkodis

01/2026 – 08/2026

Context. Akkodis is an engineering and technology consulting company. The assignment covered two AI projects: OASIS, an AI-assisted optimization platform, and AQUA-IA, computer-vision models classifying aquatic macroinvertebrates.

ASSIGNMENTS

- Optimize the OASIS engine and propose a new architecture.
- Industrialize the AQUA-IA vision models with CI/CD pipelines.
- Provide tooling for training-dataset management.

TECHNICAL CONTRIBUTIONS

- Optimized the OASIS engine and proposed a new architecture. Used LLMs on the project (Python, Streamlit, LLM).
- Built the CI/CD pipelines of the AQUA-IA models (GitHub Actions, Docker, Azure).
- Developed ADIAB (AquaIA Dataset Builder), an internal tool for building, validating and exporting datasets (Python, FastAPI, Next.js, TypeScript, SQLite, Docker).

DELIVERABLES

- Optimized OASIS engine and architecture proposal.
- CI/CD pipelines for the AQUA-IA models.
- ADIAB internal tool.

TECHNOLOGIES AND TOOLS

LLM · Python · YOLO · PyTorch · OpenCV · Streamlit · FastAPI · Next.js · TypeScript · SQLite · Docker · Azure · GitHub Actions · MLOps

SKILLS APPLIED

Applied AI & MLOps, Computer Vision, Software Engineering, DevOps & Cloud

Software Development Engineer · SuperGrid Institute

03/2025 – 12/2025

Context. SuperGrid Institute is a research institute dedicated to power transmission grid technologies. The project concerned the scientific post-processing of high-voltage electric arc tests.

ASSIGNMENTS

- Rebuild and industrialize the test post-processing pipeline.
- Automate experimental data processing.

TECHNICAL CONTRIBUTIONS

- Rewrote the existing scientific processing in Python and industrialized the post-processing pipeline.
- Automated spectral extraction and calibration of experimental measurements.
- Developed the associated tools with FastAPI and Tkinter.
- Developed test bench motor control with Arduino, C++ and Python.

DELIVERABLES

- Industrialized post-processing pipeline.
- Automated spectral extraction and calibration.

TECHNOLOGIES AND TOOLS

Python | C++ | Arduino | Git | GitHub | FastAPI | Tkinter

SKILLS APPLIED

Scientific Software, Software Engineering

Embedded Systems Engineer · Hyperion Seven

10/2022 – 10/2024

Context. Development of a secure tethered drone: embedded systems, communications and validation, in line with the safety requirements of the DGAC (French Civil Aviation Authority).

ASSIGNMENTS

- Develop the drone's embedded systems.
- Develop the on-board communications.
- Validate the system in real conditions.

TECHNICAL CONTRIBUTIONS

- Developed the embedded software in C/C++ on embedded Linux.
- Implemented communications over CAN bus and UART links.
- Hardware/software integration.
- Field testing and compliance with DGAC safety requirements.
- Implemented the LoRa protocol in Python to replace the Wi-Fi link between the drone and its controller. Developed joystick control of the gimbal in C++.

DELIVERABLES

- Embedded software and communications of the tethered drone.
- Field test campaigns.

TECHNOLOGIES AND TOOLS

Python | Flask | C/C++ | Embedded Linux | CAN | UART | Arduino | Raspberry Pi | ESP32 | LoRa | Wi-Fi

SKILLS APPLIED

Embedded Systems, Software Engineering

AI Engineer · STMicroelectronics

10/2019 – 09/2022

Context. STMicroelectronics is a global semiconductor manufacturer. The role covered the design of a hardware accelerator dedicated to artificial intelligence.

ASSIGNMENTS

- Design an AI hardware accelerator.
- Design the software interfaces integrating it with ML frameworks.

TECHNICAL CONTRIBUTIONS

- Designed an AI accelerator based on a TPU/ASIC architecture, targeting machine-learning compute performance.
- Designed the software interfaces integrating the accelerator with ML frameworks (Python, TensorFlow).
- Working environment including ASIC and FPGA.

DELIVERABLES

- Software interfaces integrating the accelerator with ML frameworks.

TECHNOLOGIES AND TOOLS

Python | TensorFlow | ASIC | FPGA

SKILLS APPLIED

Applied AI & MLOps, Embedded Systems, Scientific Software

Software Developer Intern · STMicroelectronics

04/2019 – 09/2019

Context. Performance validation of CMOS circuits through electronic simulation campaigns.

ASSIGNMENTS

- Automate the electronic simulation campaigns.

TECHNICAL CONTRIBUTIONS

- Developed Python and C tools automating the simulation campaigns.
- Sped up and hardened the CMOS test and validation process.

DELIVERABLES

- Simulation automation tools.

TECHNOLOGIES AND TOOLS

C | Python | Test | Automation

SKILLS APPLIED

Scientific Software, Software Engineering

04 Technical achievements

Achievements are described at each project's public level; no confidential employer information is disclosed.

Post-processing of high-voltage arc tests

Related experience: Software Development Engineer · SuperGrid Institute

Objective
Make the processing of high-voltage arc test measurements reliable and automated.

Approach
Rewrite of the existing processing in Python and industrialization of the pipeline; automated spectral extraction and calibration.

Contribution
Rewrite, industrialization and automation.

Outcome
Industrialized post-processing pipeline.

Python · C++ · Arduino · Git · GitHub · FastAPI · Tkinter

Embedded systems of a secure tethered drone

Related experience: Embedded Systems Engineer · Hyperion Seven

Objective
Develop the embedded systems and communications of a tethered drone meeting DGAC safety requirements.

Approach
Embedded C/C++ software on embedded Linux, CAN and UART communications, hardware/software integration validated by field tests.

Contribution
Embedded development, communications, integration and testing.

Outcome
Drone embedded software and communications, validated in field tests.

C/C++ · Embedded Linux · CAN · UART

Development of a drone radio communication link

Related experience: Embedded Systems Engineer · Hyperion Seven

Objective
Replace the Wi-Fi link between the drone and its controller with LoRa.

Approach
Developed and integrated the LoRa radio link using Arduino, Raspberry Pi and ESP32.

Contribution
Implemented the LoRa communication protocol.

Outcome
Development and integration work; final deployment and radio performance are not documented.

Python · Arduino · Raspberry Pi · ESP32 · LoRa · Wi-Fi

AI hardware accelerator (TPU/ASIC)

Related experience: AI Engineer · STMicroelectronics

Objective
Accelerate machine-learning computation with a dedicated hardware accelerator.

Approach
Hardware design (TPU/ASIC architecture) and software design (integration interfaces with ML frameworks).

Contribution
Design of the accelerator and its software interfaces.

Outcome
Software interfaces integrating the accelerator with ML frameworks.

Python · TensorFlow · ASIC · FPGA

OASIS: AI-assisted optimization platform

Related experience: AI / MLOps Development Engineer · Akkodis

Objective
Provide an optimization platform combining AI models and advanced algorithms.

Approach
Optimized the existing engine using Python, Streamlit and LLMs. Proposed a new architecture.

Contribution
Optimize the engine and propose a new architecture.

Outcome
Optimized engine and architecture proposal.

Python | Streamlit | LLM

AQUA-IA: macroinvertebrate classification

Related experience: AI / MLOps Development Engineer · Akkodis

Objective
Classify and monitor aquatic macroinvertebrate species with computer vision.

Approach
Industrialization of the vision models through CI/CD pipelines.

Contribution
Built the models' CI/CD pipelines.

Outcome
AQUA-IA models integrated into a CI/CD chain.

Python | PyTorch | OpenCV | YOLO | Docker | GitHub Actions | Azure

ADIAB: AquaIA Dataset Builder

Related experience: AI / MLOps Development Engineer · Akkodis

Objective
Build, validate and export the training datasets of the AQUA-IA models.

Approach
Internal application dedicated to dataset management, backed by a database.

Contribution
Developed the tool.

Outcome
Internal dataset management tool.

Python | FastAPI | Next.js | TypeScript | SQLite | Docker

05 Personal projects

Projects carried out outside my professional assignments, on a personal basis. They demonstrate complementary technical skills and are not salaried experience.

Banzami · Wallet-native payment network

Personal project · banzami.com

Overview	Wallet-native payment network designed for Angola and as the first operator on the open BANZA protocol: instant Kwanza payments via wallets, QR codes, payment links and SDKs.
Problem addressed	Payments still rely on manual transfers, cash and screenshots as proof of payment.
Architecture and approach	Network built around wallets, QR codes, payment links and SDKs; designed as the first operator on the open BANZA protocol.
Contribution	Design and development (personal project).

Rust · Go

BANZA · Open financial protocol

Personal project · banza.network

Overview	Open financial protocol for interoperable payments: public rules, contracts, certification criteria, federation and financial invariants.
Problem addressed	Let independent payment operators interoperate under shared, verifiable rules.
Architecture and approach	Protocol specification: public rules, contracts, certification criteria, federation and financial invariants; conformance demonstrated through deterministic testing.
Contribution	Design and development (personal project).

LLM · RAG · Qwen · DeepSeek

Doa · Crowdfunding platform

Personal project · doadoa.app

Overview	Crowdfunding platform for Angola and African markets: designed so donors can pay without an account and owners can share campaigns on WhatsApp, TikTok and Instagram.
Problem addressed	Enable simple fundraising for Angola and African markets, without a donor account.
Architecture and approach	Mobile-first platform: donations without an account, campaign sharing on WhatsApp, TikTok and Instagram, PDF receipts, Portuguese interface and Banzami payments for AOA campaigns.
Contribution	Design and development (personal project).

Next.js · Supabase · PostgreSQL

06 Education and languages

2024	**Master Expert en informatique et système d'information**, EPSI, École d'ingénierie informatique
2022	**Bachelor Concepteur Développeur d'Applications / DevOps**, EPSI, École d'ingénierie informatique
2020	**Master Instrumentation, mesure, métrologie**, Aix-Marseille Université

Titles as presented by the institutions.

PORTUGUESE
Native

FRENCH
Fluent

ENGLISH
Professional

07 Contact

Available to discuss scientific software, industrial software and R&D development roles.

PHONE
+33 6 21 47 09 49

E-MAIL
contact@fidelmonteiro.com

PORTFOLIO
www.fidelmonteiro.com

LINKEDIN
linkedin.com/in/fidel-monteiro-0275a3305

GITHUB
github.com/fm65