

YEISON N. Cardona A.

PhD(c) | MSc | Electronic Engineer | Software Developer | Python Ninja

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📍 Manizales Caldas - Colombia



Multidisciplinary engineer with a strong background in *electronic systems* and *industrial automation*. I specialize in *backend development* and *DevOps workflows*, focusing on scalable *microservices*, API architecture, and modern deployment practices. With a solid foundation in *Python* and a passion for building practical, maintainable systems, I have not only delivered end-to-end solutions—from requirements gathering to production rollout, owning CI/CD, *observability*, and post-release monitoring—but also taken *technical lead* roles, guiding architectural decisions, mentoring teams, and ensuring alignment with strategic goals. I thrive in *high-autonomy* and *start-up environments*, adapting quickly to evolving specs, ensuring quality through rigorous testing, and collaborating across disciplines to address edge cases and deliver robust solutions.

SKILLS

Leadership & Management	Technical Leadership, Team Mentoring, Architectural Decision-Making, Project Management, Cross-Functional Collaboration, Stakeholder Communication
DevOps Practices	CI/CD, Infrastructure as Code, Monitoring, Container Orchestration, Agile, Scrum, Technical Roadmapping
Cloud Platforms	AWS, Azure, Google Cloud Platform
Databases	PostgreSQL, TimescaleDB, SQLite, MySQL, MongoDB
Development tools	Git, Vim, Docker, Docker Swarm, Kubernetes, Jupyter Notebooks, Apache Kafka
DevOps Practices	CI/CD, Infrastructure as Code, Monitoring, Container Orchestration, Agile, Scrum
Frameworks	Django, Angular, FastAPI, Flask, TensorFlow, PyTorch, Keras, Bootstrap, Astro, React, Next.js, Node
Machine Learning	Scikit-learn, TensorFlow, PyTorch, Keras, Keras Tuner, WandB, Roboflow
Generative AI	Exposure to LLMs, Prompt Engineering, Retrieval-Augmented Generation (RAG)
Operating systems	MacOS, Arch Linux, Manjaro, FreeBSD, Ubuntu Server
Programming	Python, Bash, HTML, JavaScript, TypeScript, CSS, C, C++

TL;DR

Full-stack engineer with 15 years of experience in *Python* and over a decade building web applications with *Django*. I specialize in orchestrating *microservices*, managing concurrent workloads with *asyncio*, and deploying containerized environments in *Kubernetes*. My work spans from API design and scalable backend architectures to monitoring stacks and automated alerting systems. I build robust systems that integrate *observability* from the ground up—leveraging Prometheus, Grafana, and custom logging pipelines to ensure reliability, traceability, and fast diagnostics.

I have worked extensively with *PostgreSQL* and SQL-based data models, particularly in real-time systems such as biosignal monitoring, research platforms, and distributed pipelines. My contributions frequently bridge infrastructure and analytics, supporting data teams through automated ingestion workflows, structured logging, and CI/CD pipelines tailored to high-throughput environments.

In parallel, I've led the development of internal tools and frameworks, integrating AI-based triggers, performance metrics, and anomaly detection into production systems. I've also supported organizations in their transition toward containerized and cloud-native stacks, maintaining code quality through rigorous testing, continuous integration, and infrastructure-as-code practices. Additionally, I have hands-on experience with modern frontend development using *TypeScript* and *Angular*, enabling seamless integration between backend services and interactive UIs.

Key Skills

- Python (FastAPI, Django, asyncio, SQLAlchemy)
- TypeScript, Angular, React (TS)
- SQL, PostgreSQL, TimescaleDB, SQLite
- ETL pipelines and data integration
- API design and RESTful services
- CI/CD with GitHub Actions, Docker, and Nginx
- Monitoring with Prometheus and Grafana
- Structured logging and trace diagnostics
- Ansible and infrastructure-as-code
- Secure deployments (HTTPS, JWT, OAuth2)
- PyTest, Coverage, and Bash scripting

DevOps & Observability

- Docker and Docker Compose
- Kubernetes (Swarm/K8s)

Highlighted Projects

- › **ICU Monitoring:** Real-time biosignal ingestion with alert thresholds and metrics dashboards
- › **Chaski-Confluent:** Distributed message pipeline with TensorFlow and custom scheduling
- › **BCI-Framework:** EEG-based research infrastructure with integrated observability
- › **Scout:** Productivity analytics system with smart alerting and visual reports

- › **CtenoLab:** Web-based experimental control suite with stimulus delivery and event-locked feedback over HTTP/Serial

Tooling & Automation

- › Git & GitHub Workflows
- › Makefiles and automated linting (Black, Flake8)
- › Pre-commit hooks and test coverage enforcement
- › Log parsers, ingestion agents, and custom CLI tools
- › Prompt Engineering & LLM-based log triage

TECHNICAL PROFICIENCIES

Django Framework

Over the course of my career, I have gained extensive experience working with robust frameworks like Django, leveraging their full potential by integrating various tools and technologies to create scalable, maintainable, and high-performance solutions. My expertise spans the core framework as well as a broad range of auxiliary tools that enhance functionality, security, and performance.

Django Core

- › ORM (Object-Relational Mapping)
- › Django REST Framework (API Development)
- › Django Channels (WebSockets and Asynchronous Support)
- › Django Admin Customization
- › Form Handling and Validation

Database Technologies

- › PostgreSQL with Django ORM
- › TimescaleDB (Time-series database with PostgreSQL)
- › SQLite (Development and Testing)

Authentication and Security

- › SSL and HTTPS Configurations

DevOps and Deployment

- › Docker and Docker Compose for containerization
- › Nginx and Gunicorn for production deployment
- › CI/CD pipelines with GitHub Actions

Testing and Optimization

- › PyTest and Django Test Suite
- › Coverage and Performance Benchmarking
- › Query Optimization and Indexing
- › Celery for Asynchronous Task Management

FastAPI Framework

Throughout my professional journey, I have worked extensively with FastAPI, leveraging its high-performance features for building fast, scalable, and efficient APIs. FastAPI's use of modern Python features such as type hints and asynchronous programming has allowed me to deliver reliable and responsive API solutions. Below are some key tools and technologies I have utilized alongside FastAPI.

FastAPI Core

- › Type Hints and Pydantic Models for Data Validation
- › Asynchronous Endpoints for High Concurrency
- › Dependency Injection for Clean Architecture
- › Automatic Interactive API Documentation with Swagger and ReDoc

- › OAuth2 with JWT Tokens for Secure Authentication
- › Role-based Access Control (RBAC)

Database and ORM Integration

- › SQLAlchemy for Database Interaction
- › PostgreSQL with Async Support
- › Tortoise ORM for Lightweight Async Operations

DevOps and Deployment

- › Docker for Containerization
- › Nginx and Unicorn for FastAPI Deployment
- › CI/CD Pipelines with GitHub Actions

Security and Authentication

Testing and Optimization

- › PyTest for Unit and Integration Testing
- › Benchmarking with locust.io for Performance Testing
- › Query Optimization for Asynchronous Operations

TensorFlow Framework

I have extensive experience using TensorFlow for developing and deploying machine learning and deep learning models. Throughout my projects, I have leveraged TensorFlow's flexible architecture to build scalable models for various tasks, including data classification, prediction, and image processing. My expertise includes both the core TensorFlow library as well as its auxiliary tools and frameworks for optimizing performance and deployment.

Core TensorFlow

- › Model Building with Keras API
- › Custom Layers and Activation Functions
- › Transfer Learning and Pre-trained Models
- › Tensor Manipulation with TensorFlow Core

Model Optimization

- › TensorFlow Lite for Edge Devices
- › Model Quantization and Pruning
- › TensorFlow Profiler for Performance Tuning

Distributed Training and Deployment

- › Distributed Training with TensorFlow Mirrored Strategy
- › TensorFlow Serving for Model Deployment
- › TensorFlow Extended (TFX) for End-to-End Pipelines

Desktop Application Development

In addition to web and API development, I have a strong background in developing desktop applications using robust frameworks. My experience includes creating cross-platform, user-friendly applications that prioritize performance, scalability, and ease of use. Below are some of the key tools and technologies I have worked with in desktop development.

Frameworks and Libraries

- › PyQt for Building Graphical User Interfaces (GUIs)
- › PySide (Qt for Python) for Advanced GUIs
- › Tkinter for Lightweight Python GUIs
- › wxPython for Native-Looking Applications
- › Kivy for Multi-Touch Applications

Cross-Platform Compatibility

- › Packaging Applications with PyInstaller
- › Developing for Windows, macOS, and Linux
- › Integration with Native System Features

Additional Features

- › SQLite and SQLAlchemy for Local Databases
- › Asynchronous Operations and Threading
- › File Handling and System Automation

Containerization and Orchestration with Docker and Swarm

I have extensive experience working with Docker for containerization and Docker Swarm for orchestration of distributed systems. My expertise includes creating and managing containers, building custom Docker images, and orchestrating multi-container environments to ensure high availability, scalability, and fault tolerance in production environments.

Docker

- › Building and Managing Custom Docker Images
- › Docker Compose for Multi-Container Applications
- › Container Networking and Volumes
- › Docker Hub for Image Storage and Distribution

Docker Swarm

- › Swarm Cluster Setup and Management
- › Service Scaling and Load Balancing
- › Secrets and Configurations Management
- › Swarm Networking and Overlay Networks

CI/CD and Deployment

- › Integrating Docker in CI/CD Pipelines
- › Automated Testing and Deployment with GitHub Actions
- › Continuous Deployment of Swarm Services

Monitoring and Optimization

- › Monitoring Container Performance with Prometheus and Grafana
- › Docker Logs and Troubleshooting
- › Resource Optimization for Containers

Embedded Systems and FPGA Development

I have extensive experience in the design and development of embedded systems and FPGA-based solutions, working with both hardware and software components to create efficient, high-performance systems. My expertise spans across various microcontroller platforms, FPGA architectures, communication protocols, and embedded software development tools, allowing me to deliver optimized solutions for real-time systems, IoT, and high-speed processing applications.

Microcontroller Platforms

- › ARM Cortex-M Series
- › ESP32 and ESP8266 for IoT Applications
- › Raspberry Pi for Embedded Linux Systems
- › AVR and Arduino Platforms

FPGA Development

- › VHDL and Verilog for Hardware Description
- › Xilinx Vivado for FPGA Design and Simulation
- › Altera Quartus for FPGA Programming
- › High-Level Synthesis (HLS) for FPGA Acceleration

Communication Protocols

- › SPI, I2C, and UART for Peripheral Communication
- › MQTT and HTTP for IoT Communication

- › Modbus and CAN for Industrial Applications
- › Bluetooth and Wi-Fi Integration

Embedded Software Development

- › Real-Time Operating Systems (RTOS)
- › Low-Level Programming with C and C++
- › Python for Prototyping and Automation
- › Firmware Development and Debugging

Development Tools and IDEs

- › PlatformIO and Arduino IDE for Firmware Development
- › Keil uVision and STM32CubeIDE for ARM Cortex Development
- › JTAG and SWD Debugging Tools
- › Logic Analyzers and Oscilloscopes for Hardware Debugging

Linux Administration and Development

I have extensive experience working with Linux-based systems, particularly in environments that require high reliability, performance, and customization. My proficiency with Linux extends from system administration and scripting to development and automation, with a deep understanding of the Linux ecosystem and tools.

System Administration

- › Package Management (Pacman, apt, yum)
- › User and Permission Management
- › Networking Configuration (IPTables, FirewallD)
- › System Monitoring and Log Management (Syslog, journalctl)

Scripting and Automation

- › Bash and Python Scripting for Automation
- › Cron Jobs for Task Scheduling
- › Systemd Service Configuration and Management
- › Ansible for Configuration Management

Development and Customization

- › Kernel Tuning and Module Management
- › Building and Configuring Custom Linux Kernels
- › Arch Linux and System Customization
- › Shell Scripting for System Optimization

Networking and Security

- › SSH Configuration and Hardening
- › VPN and Tunneling (OpenVPN, WireGuard)
- › SELinux and AppArmor for Security Enforcement
- › Disk Encryption and Secure File Transfer

PROFESSIONAL EXPERIENCE

November 2025

Software Engineer (Research Project), UNIVERSIDAD NACIONAL DE COLOMBIA, Manizales, Caldas

September 2025

Designed and implemented the full software stack of a remote RF-sensing platform deployed on a secure VPS environment. Developed backend services and WebSocket interfaces for real-time interaction with distributed SDR-based sensors; implemented spectral-analysis capabilities including FFT processing (RBW/VBW control), noise-floor estimation, occupied-bandwidth metrics, peak/marker tools, and automatic detection of unauthorized emissions. Built device-management, user-access, monitoring, and measurement-scheduling modules as described in the official platform manual. Ensured secure data transport (TLS), OAuth-based authentication, and integration with geolocation and logging services, enabling reliable nationwide spectrum-monitoring operations.

[Strategic Planning](#) [Research Consulting](#) [Developer](#)

August 2025 May 2024	Adjunct Professor, UNIVERSIDAD NACIONAL DE COLOMBIA, Manizales, Caldas Conducted in-person teaching of the undergraduate course "Digital Signal Processing" for the Electronic Engineering program at the Faculty of Engineering and Architecture, Universidad Nacional de Colombia. Responsibilities included preparing lectures, guiding practical sessions, and evaluating student performance. <div style="border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-top: 5px; display: inline-block;">Adjunct Professor</div>
April 2025 February 2025	Technical Lead, DISERED, Bogotá Led and coordinated a multidisciplinary team of software engineers in the design, development, and deployment of scalable microservices architectures. Defined technical strategies, ensured adherence to software engineering best practices, and maintained high standards of code quality, system reliability, and performance. Translated business requirements into robust technical solutions, guided architectural decisions, oversaw CI/CD pipelines, and fostered collaboration between technical and non-technical stakeholders. Also mentored team members and promoted innovation through modern technologies and agile methodologies. <div style="border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-top: 5px; display: inline-block;">Python</div> <div style="border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-left: 5px; display: inline-block;">FastAPI</div> <div style="border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-left: 5px; display: inline-block;">Docker</div> <div style="border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-left: 5px; display: inline-block;">PostgreSQL</div> <div style="border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-left: 5px; display: inline-block;">Google Cloud Platform</div>
December 2024 May 2024	Software Engineer (Research Project), UNIVERSIDAD NACIONAL DE COLOMBIA, Manizales, Caldas Provided professional services as an electronic engineer with a master's degree in Industrial Automation to support the conceptual design, requirement specification, implementation, and configuration of software-defined radio (SDR) sensors. Delivered a cost-efficient and scalable prototype for radio spectrum monitoring in Colombia, integrating SDR technology with deep learning techniques. <div style="border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-top: 5px; display: inline-block;">Python</div> <div style="border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-left: 5px; display: inline-block;">SDR</div> <div style="border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-left: 5px; display: inline-block;">Deep Learning</div> <div style="border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-left: 5px; display: inline-block;">Prototyping</div>
September 2024 June 2023	Research Engineer (Project Lead), UNIVERSIDAD NACIONAL DE COLOMBIA, Manizales, Caldas Led research and development of a functional prototype of an electronic tongue aimed at identifying flavor profiles in fine cocoa of Colombian origin. Oversaw sensor integration, designed signal processing workflows, and directed system validation. <div style="border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-top: 5px; display: inline-block;">Signal Processing</div> <div style="border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-left: 5px; display: inline-block;">Sensor Integration</div> <div style="border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-left: 5px; display: inline-block;">Prototype Validation</div>
March 2024 June 2023	Research Consultant (Strategic Planning), UNIVERSIDAD NACIONAL DE COLOMBIA, Bogotá Designed and proposed a strategic plan for the establishment of the inter-campus Center of Excellence in Medicine and Artificial Intelligence (SEMAI), as part of the national call for the consolidation of centers of excellence 2020–2021. <div style="border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-top: 5px; display: inline-block;">Strategic Planning</div> <div style="border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-left: 5px; display: inline-block;">Research Consulting</div> <div style="border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-left: 5px; display: inline-block;">AI in Medicine</div>
December 2023 January 2023	Software Engineer (Project Lead), DUNDERLAB/UNIVERSIDAD TECNOLÓGICA DE PEREIRA, Pereira, Risaralda Led the design and implementation of a gait pattern monitoring system, focusing on data acquisition, processing, and visualization to support movement analysis and rehabilitation applications. Oversaw technical decisions and coordinated development tasks to ensure system reliability and applicability. <div style="border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-top: 5px; display: inline-block;">Python</div> <div style="border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-left: 5px; display: inline-block;">Data Acquisition</div> <div style="border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-left: 5px; display: inline-block;">Signal Processing</div> <div style="border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-left: 5px; display: inline-block;">Visualization</div>
May 24, 2023 January 2023	Project Lead – Information Management Tool, DUNDERLAB/UNIVERSIDAD TECNOLÓGICA DE PEREIRA, Pereira, Risaralda Directed the design and development of an information management tool to support the planning and coordination of Colombia's national natural gas system. Oversaw backend design, data modeling, and system integration, ensuring scalability and reliability of the solution. <div style="border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-top: 5px; display: inline-block;">Python</div> <div style="border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-left: 5px; display: inline-block;">PostgreSQL</div> <div style="border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-left: 5px; display: inline-block;">Data Modeling</div> <div style="border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-left: 5px; display: inline-block;">System Integration</div>
May 2023 March 2023	Engineering Consultant, UNIVERSIDAD NACIONAL DE COLOMBIA, Manizales, Caldas Designed and led the development of a protocol for a biosignal acquisition and capture system to monitor cardio-cerebral-pulmonary activity in Neonatal Intensive Care Unit (NICU) patients. Directed the creation of a prototype applying machine learning techniques to biosignal processing, with initial validation in a simulated environment. <div style="border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-top: 5px; display: inline-block;">ESP32</div> <div style="border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-left: 5px; display: inline-block;">MicroPython</div> <div style="border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-left: 5px; display: inline-block;">PostgreSQL</div> <div style="border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-left: 5px; display: inline-block;">Django</div> <div style="border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-left: 5px; display: inline-block;">Django Rest Framework</div>

December 2022	Engineering Consultant, UNIVERSIDAD NACIONAL DE COLOMBIA, Manizales, Caldas
September 2022	Spearheaded the development of an information visualization system for campus-level research, extension, and innovation indicators. Integrated the system with the Research and Extension Department's website, supported outreach activities with local and national entities, and contributed to the office's strategic planning structure.
	Python Django Dash PostgreSQL JavaScript HTML CSS
December 2022	Software Engineer (Ultrasound Localization), DUNDERLAB/UNIVERSIDAD TECNOLÓGICA DE PEREIRA, Pereira, Risaralda
September 2022	Led the development of backend and user interface modules for a software tool focused on reconstruction and localization, as part of the project "Development of a needle tracking and nerve localization tool in ultrasound for regional anesthesia practice." Directed integration efforts to support treatment of acute traumatic pain and prevention of chronic neuropathic pain.
	Python Django TensorFlow Matplotlib Scikit-learn
September 2022	Software Engineer (Medical Thermography), DUNDERLAB/UNIVERSIDAD NACIONAL DE COLOMBIA, Manizales, Caldas
June 2022	Developed software for thermographic measurement and regional anesthesia monitoring, as part of the project "Support tool for predicting the effects of local anesthetics via neuroaxial epidural using infrared thermography." Delivered a solution integrating image analysis techniques for clinical decision support.
	Python PySide Raspberry Pi GNU/Linux
March 2022	Research Engineer (EEG Preprocessing), DUNDERLAB/UNIVERSIDAD TECNOLÓGICA DE PEREIRA, Pereira, Risaralda
January 2022	Designed and fine-tuned preprocessing algorithms for EEG recordings, enhancing the acquisition module of a prototype system for neuropathic pain diagnosis. Improved signal quality for accurate downstream analysis.
	Python Kafka Brython Tornado HDF5 OpenBCI
January 2022	Software Engineer (Neurophysiological Signals), DUNDERLAB/UNIVERSIDAD NACIONAL DE COLOMBIA, Manizales, Caldas
December 2021	Designed and implemented a neurophysiological signal acquisition module within the research project "Enhanced and interpretable deep learning framework to support computer-assisted diagnosis systems." Enabled real-time biosignal capture for machine learning applications in healthcare.
	Python Kafka Brython Tornado
November 2021	Software Engineer (ADHD Diagnostic UI), DUNDERLAB/UNIVERSIDAD TECNOLÓGICA DE PEREIRA, Pereira, Risaralda
July 2021	Delivered a web-based user interface for a diagnostic support tool for Attention Deficit Hyperactivity Disorder (ADHD), enabling intuitive access to data visualization and clinical resources.
	Python PySide Kafka HTML CSS Brython
May 2021	Research Engineer (Medical Imaging - Neurostimulation), UNIVERSIDAD NACIONAL DE COLOMBIA, Manizales, Caldas
September 2019	Led morphological characterization of brain structures using medical imaging to support surgical implantation of neurostimulators for Parkinson's disease treatment. Developed image classification methodologies, registration algorithms, and contributed to the construction of anatomical atlases.
	Python PySide Kafka HTML CSS Brython OpenBCI Raspberry Pi JavaScript Django NumPy SciPy Matplotlib

💻 PROJECTS

Throughout my career, I have led and developed individual and collaborative projects in software frameworks, signal processing, and web infrastructure. These works highlight my focus on building open, modular, and scalable solutions—from real-time neuroscience platforms to developer frameworks and backend systems. Below is a selection of representative open-source projects I have designed, maintained, or released.

REMOTE SPECTRAL SENSING PLATFORM

2025

[cteno.dunderlab.com](#)

Developed a full remote RF-sensing platform enabling real-time spectrum acquisition, processing, and device orchestration over distributed SDR nodes. Implemented FFT-based spectral analysis (RBW/VBW control, peak/marker tools, OBW/-XdB bandwidth metrics), automated detection of unauthorized emissions, and geolocated monitoring from multiple remote sensors. Built backend WebSocket services for low-latency data streaming, a full device-management and scheduling system, and secure TLS/OAuth access. Deployed the entire stack on a hardened Linux VPS with continuous monitoring and persistent storage of spectral datasets.

FFT/Signal Processing | SDR (HackRF) | TLS | OAuth | PostgreSQL/MySQL | Linux VPS | Angular | Django REST Framework

CTENOLAB

2025 - PRESENT

[cteno.dunderlab.com](#)

Designed and developed a real-time cognitive experimentation platform integrating neurophysiological paradigms with hardware triggers over TCP/IP. Implemented distributed communication with dynamic node discovery, subscription-based messaging, and real-time routing. Added remote Python execution, TensorFlow Serving integration, and AI-driven broadcasting for experimental control.

Python | TCP/IP | SWARM API | Docker | TensorFlow | RPyC | WebUSB | WebSerial

RADIANT WRAPPER

2023 - PRESENT

[github.com/dunderlab/radiant-wrapper](#)

Developed a Python-to-Android build system that automates the packaging of static HTML and Django projects into Android APKs. Implemented pre-built Docker images with NDK/SDK integration and automated GitHub workflows for reproducible builds. Added support for environment detection, CI/CD pipelines, and lightweight deployment of research and MVP applications.

Python | Docker | GitHub Actions | Android NDK | Django | HTML

CHASKI-CONFLUENT

2022 - PRESENT

[chaski.dunderlab.com/](#) [github.com/dunderlab/python-chaski](#)

Designed and developed a distributed communication framework over TCP/IP featuring dynamic node discovery, subscription-based messaging, and real-time message routing. The system includes support for remote Python execution, TensorFlow Serving integration, and AI-driven message broadcasting.

Python | TCP/IP | SWARM API | Docker | Tensorflow | RPyC

FOUNDATION

2022 - PRESENT

[github.com/dunderlab/python-dunderlab.foundation](#)

Created a modular Python framework to build scalable and distributed systems. Provides utilities for data pipelines, inter-process communication, and infrastructure orchestration with an emphasis on flexibility and system decoupling.

Python | Docker | Distributed Systems | Modular Architecture

DOCS: AUTOMATED SPHINX DOCUMENTATION GENERATION

2023 - PRESENT

[github.com/dunderlab/python-dunderlab.docs](#) [dunderlab-docs.readthedocs.io](#)

Built a Python module to automate the generation of Sphinx documentation from Jupyter Notebooks using nbsphinx. Includes features such as automated README creation, HTML index generation, and seamless Docker and GitHub workflows integration.

Python | Sphinx | nbsphinx | Jupyter Notebooks | Docker | GitHub Workflows

BCI-FRAMEWORK

2018 - 2022

[docs.bciframework.org](#) [github.com/UN-GCPDS/bci-framework](#)

Developed a modular framework for designing and running psychophysiological experiments with OpenBCI. Included real-time data visualization, distributed stimulus delivery, and signal processing tools for research workflows.

Python | Tornado | Matplotlib | Brython | Kafka | OpenBCI

OPENBCI-STREAM

2018 - 2022

[openbci-stream.readthedocs.io](#) [github.com/UN-GCPDS/openbci-stream](#)

Created a high-level module for real-time EEG, EMG, and ECG data acquisition and streaming using the OpenBCI Cyton board, enabling distributed neuroscience experiments and analysis.

Python | Kafka | OpenBCI

MATPLOTLIB-FIGURESTREAM

2019 - 2022

[figurestream.readthedocs.io](#) [github.com/UN-GCPDS/matplotlib-figurestream](#)

Built a lightweight backend to stream Matplotlib animations over the web, allowing real-time visualizations in distributed systems and remote monitoring tools.

Python | Matplotlib | Flask

QT-MATERIAL

2019 - 2022

[qt-material.readthedocs.io](#) [github.com/UN-GCPDS/qt-material](#)

Designed and maintained a Material Design-inspired stylesheet for PyQt and PySide applications. Focused on visual consistency and improved UX across platforms.

Python PySide PyQt6 CSS QT

RADIANT FRAMEWORK

2019 - 2022

[rariant-framework.readthedocs.io](#) [github.com/dunderlab/python-rariant_framework](#)

Engineered a Brython-based framework for building responsive web apps entirely in Python. Integrated frontend logic with Tornado for dynamic, reactive interfaces.

Python Tornado Brython

PINGUINO PROJECT

2012 - 2015

[pinguino.cc](#) [github.com/PinguinoIDE](#)

Contributed to the development of an open-source electronics prototyping platform and IDE, supporting Microchip microcontrollers and aiming to simplify embedded system design.

Python PySide Microchip

LANGUAGES

English



Spanish

STRENGTHS

- Enthusiast
- Motivated
- Autonomous

FORMATION

currently	PhD in Automation Engineering, Universidad Nacional de Colombia
2022	MSc in Industrial Automation, Universidad Nacional de Colombia
2018	BSc in Electronic Engineering, Universidad Nacional de Colombia