

DIOGO PERALTA CORDEIRO

Software engineer focused on backend systems, infrastructure and product delivery

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— PROFILE

I am a **computer scientist and software engineer** from Porto, Portugal, completing a **PhD in Computer Engineering** at the University of Porto.

- Turn ambiguous technical problems into architecture, milestones, working software and documentation across **8+ years** of research and engineering.
- Led an **EU Horizon 2020-funded** GNU social rewrite, replacing legacy foundations with a Symfony-based architecture while coordinating releases, accessibility and community work.
- Mentored **13 student developers** across Google Summer of Code, a community programme and FEUP project teams, combining code review with written technical guidance.
- Work comfortably across PHP/Symfony, SQL, Linux, distributed systems, dependable computing, robotics, spatial interaction and technical education.

C++ was my primary implementation language throughout the PhD, spanning spatial-interaction runtimes, computer-vision integration and application contracts.

Leadership style. I work well in high-agency teams: written decisions, explicit trade-offs, small milestones, visible risks and a bias toward maintainable systems rather than clever one-offs.

Technical communication. I can move between code, architecture, project plans, teaching material and stakeholder conversations. I care about making complex systems understandable enough that others can operate, extend and teach them.

Mentoring. I have mentored student developers and taught technical workshops. I treat mentoring as an engineering multiplier: better explanations reduce future coordination cost and improve quality.

— TECHNICAL SKILLS

Core programming

- **C++: primary language throughout the PhD**, including spatial-interaction runtimes and systems architecture.
- PHP and SQL: production applications, open-source platforms and data models.
- Python: research, experimentation, data analysis and tooling.
- C, Java, JavaScript, Haskell and Prolog: systems, web and computer-science projects.
- Bash, Linux and Git: daily development and deployment.

Data, optimisation & research

- Algorithms, data structures, optimisation: CS/research foundations
- Computer vision and machine perception: doctoral/research work
- Experimental design and technical reporting: research delivery
- LaTeX and scientific writing: papers/thesis

Delivery & leadership

- Technical architecture and roadmap ownership: CTO/open-source/founder roles
- Mentoring, code review and documentation: students/contributors
- Stakeholder communication and technical training: client/research settings
- Agile/project planning, risk and milestones: PM foundations

Hardware & spatial systems

- Projection-based AR / Pro-Cam systems: PhD/Spectaria
- Raspberry Pi, sensors, embedded integration: robotics/ASV work
- Dependable systems and interface reasoning: aerospace context

Languages

- Portuguese: native
- English: C1 - Cambridge CAE; C2 in Reading/Use of English

Systems, DevOps & security

- Debian/Linux server administration: homelab since 2016
- Docker / Docker Compose: self-hosted services
- Backups, restore drills, monitoring: ops hygiene
- LUKS, SSH keys, fail2ban, firewalling: hardening mindset
- Nextcloud, Mailcow, Gitea, Matrix/Synapse, ntfy: operated services

Web & backend

- Symfony, Doctrine ORM, PHP-FPM: GNU social / web apps
- REST-style APIs, ActivityPub, WebFinger: distributed web protocols
- HTML5, CSS3, accessibility, responsive UI: user-facing web
- SQLite, MySQL/MariaDB, Redis: data/cache layers
- Nginx, Apache, Let's Encrypt: web serving/TLS

— SELECTED IMPACT

Technical leadership across research and production

Software, systems and research contexts

Engineering ownership. Led an EU Horizon 2020-funded open-source platform rewrite, coordinating architecture, implementation, accessibility, plugins, releases and community communication.

Team multiplier. Mentored **13 student developers** across three programme formats, using reviews, milestones and documentation to turn learning into shipped work.

Research-to-system translation. Connected dependable computing, robotics, machine perception and spatial interaction research to deployable software constraints.

Project and program execution

Milestones, stakeholders, risk and delivery

Execution discipline. Structure projects around four practical workstreams: architecture, implementation, operations and stakeholder communication.

Stakeholder fluency. Turn research, business and institutional constraints into written decisions, bounded milestones and testable delivery criteria without losing technical precision.

Teaching, mentoring and curriculum design

Computer Science and engineering education

Teaching practice. Delivered **11 recorded engagements** on Git, dependable computing, embedded systems and decentralised networks, with four talks turned into reusable public resources.

Mentoring. Supported **13 students** through code review, architecture guidance and incremental delivery across GSoC, a community-funded programme and FEUP teams.

Pedagogy. Completed evidence-based undergraduate STEM teaching training and Portuguese trainer certification, applying active learning to practical technical competence.

Working internationally

Remote-friendly, English-working

Work posture. Comfortable with English-speaking, distributed and documentation-heavy environments. I am drawn to teams where the work means raising technical quality, reducing ambiguity and helping others do their best work.

Software Engineer / Applied Scientist

2026–present

Spectaria - spatial interaction platform for museums

- Designed a **four-layer product architecture** combining Pro-Cam units, removable NFC/button controls, a web Studio/Manager and privacy-aware aggregated indicators.
- Turned doctoral prototypes into a deployment model covering calibration, installation, operation, support and institutional stakeholder material.
- Reduced dependence on one-off exhibition code by framing spatial interaction as reusable, maintainable museum infrastructure.

Key areas: Projection-based AR, Pro-Cam calibration, computer vision, spatial interaction, interaction design, web application architecture, SQLite/SQL, Linux/Nginx, product strategy.

[Reference](#)

Full-stack Software Engineer / Systems Analyst

2022–2025

Apontamento Cordial

- Delivered private/internal web tools across **four layers**: data modelling, backend logic, administration and reporting.
- Converted scheduling, resource-allocation and operational constraints into optimisation-oriented prototypes and usable web workflows.
- Improved adoption by pairing PHP/SQL/JavaScript implementation with documentation, tailored training and client-facing technical support.
- Analysed business systems and translated findings into scoped improvements, implementation plans and maintainable operating procedures.

Key areas: PHP, SQL/SQLite/MariaDB, JavaScript, HTML5/CSS3, Linux, Bash, Git, web application design, data modelling, optimisation, process automation, technical documentation.

[Reference](#)

Lead Software Engineer / Maintainer

2019–2022

GNU social – free-software social networking platform

- Led development of **GNU social v3** with EU Horizon 2020 NGIO Discovery funding, owning architecture, maintainability, accessibility, plugin boundaries and release planning.
- Replaced legacy PEAR-era foundations with a **Symfony-based** application structure to make a long-running federated platform easier to extend and operate.
- Coordinated contributor and student delivery through written milestones, code review, documentation and public community communication.

Key areas: PHP, Symfony, Doctrine ORM, SQL, PostgreSQL, MariaDB, Redis, Memcached, ActivityPub, ActivityStreams 2.0, WebFinger, HTML/CSS, ARIA, plugin architecture, Git.

[Reference](#)

Mentor / Director of Studies

2019–2021

GNU social

- Organised Google Summer of Code at GNU social in **2019 and 2020**, mentoring **four developers** through core rewrite, frontend, federation and storage work.
- Created a community-funded Summer of Code equivalent and mentored **one additional developer** in 2020.
- Supported **eight fourth-year FEUP software-engineering students**, bringing the total to **13 mentored students** across three programme formats.
- Used milestones, architecture guidance and code review to move student work into a long-running public free-software platform.

Key areas: PHP, Symfony, ActivityPub, OpenID, Redis, Memcached, query optimisation, caching, media storage, code review, mentoring.

Co-founder & CTO

2020–2022

Kult – venture-backed social-discovery startup (UPTEC)

- Won **two competitive funding programmes**—IAPMEI StartUP Voucher and a Grant for the Web flagship grant—by turning the product idea into a credible technical and delivery plan.
- Owned architecture, engineering roadmap, team coordination and delivery from inception through funded product development.
- Balanced product discovery with implementation constraints in a venture-backed, early-stage environment at UPTEC.

Key areas: Backend architecture, web application architecture, API design, database modelling, technical interviews, product engineering, startup delivery.

[Reference](#)

On-Board Data Handling – ANTAEUS CubeSat

2022–2023

ANTAEUS CubeSat / LIP i-Astro / UC, UBI and University of Porto

- Contributed on-board data-handling and dependable-computing work to **ANTAEUS**, a **2U CubeSat** mission in high-energy astrophysics.
- Connected embedded constraints, reliability, interfaces, documentation and hardware/software coordination across three Portuguese universities.
- Helped the project reach pre-selection for ESA's **Fly Your Satellite Design Booster** programme.

Key areas: Dependable systems, CubeSat on-board data handling, embedded interfaces, fault analysis, requirements reasoning, systems engineering, technical documentation, Git.

[Reference](#)

Research Intern, Multimedia Communications Technologies

Jun–Jul 2022

Centre for Telecommunications and Multimedia (CTM), INESC TEC

- Surveyed state-of-the-art parametric human-body models and built the infrastructure needed to evaluate them reproducibly.
- Turned model outputs into a structured technical comparison another researcher could inspect and extend.
- Produced the **best-ranked work in the MCT category** according to the Summer@CTM 2022 jury.

Key areas: Computer vision, machine-learning literature, parametric 3D human-body models, 3D representation, data analysis, experimental comparison, technical reporting.

Robotics Engineer (research internship)

Aug–Oct 2020

Underwater Systems and Technology Laboratory (LSTS), FEUP

- Helped develop a low-cost autonomous surface vehicle and docking station under an **FCT BII research grant**.
- Combined vector-field trajectory guidance with close-range camera target tracking inside the LSTS toolchain.
- Integrated four onboard components—IMU, GPS, camera and Raspberry Pi 4—within an interdisciplinary student engineering team.

Key areas: Autonomous surface vehicles, Raspberry Pi, IMU, GPS, camera module, vector-field guidance, LSTS toolchain, robotics systems integration.

[Reference](#)

Self-hosted Systems Administrator / Homelab Engineer

2016–present

Personal infrastructure - [ndef.dev](#) / [diogo.site](#)

- Operate **10+ Linux services** spanning cloud storage, source hosting, email, Matrix, notifications, documentation, file transfer, XMPP/IRC and health monitoring.
- Protect filesystem data, databases, configuration and TLS material with documented encrypted backup and recovery workflows.
- Harden Nginx/PHP-FPM, TLS, SSH, service accounts and network access through least privilege, monitoring, log review and operational runbooks.

Key areas: Debian/Linux, Bash, Nginx, PHP-FPM, Docker/Docker Compose, Nextcloud, Mailcow, Gitea, Matrix/Synapse, DokuWiki, MariaDB/PostgreSQL, LUKS, rsync, systemd, Let's Encrypt, ntfy, fail2ban, OPNsense/firewalling.

Software and Computer Engineering Lead

2022–2023

Porto Space Team - INVICTUS student rocketry project

- Led E-42, Porto Space Team's Software and Computer Engineering department, for the INVICTUS student rocketry project.
- Coordinated requirements and architecture studies, mentored members and reviewed work on telemetry integration and PX4 simulation.
- Established onboarding and periodic reporting, compiled the INVICTUS Computing SitRep and delivered training on dependable real-time systems.

Key areas: Aerospace software coordination, data-handling reasoning, dependable computing, requirements, technical documentation, Git, safety-conscious engineering workflows.

[Project retrospective](#)

Student Developer (Google Summer of Code)

2018

GNU social

Implemented the **W3C ActivityPub protocol** as a GNU social plugin during **Google Summer of Code 2018**, extending federation support in a mature public codebase. Technical report: [go.diogo.site/gsoc2018](#).

Key areas: PHP, ActivityPub, ActivityStreams 2.0, federation protocols, HTTP APIs, plugin architecture, Git.

[Reference](#)

Personal Website & Technical Publishing Platform

2016–present

diogo.site / ndef.dev

- Built a custom PHP/SQLite content and CV system serving **three public properties**: the main site, interactive CV and Logbook.
- Combined editable page and CV data, profile-specific output, PDF generation and a long-running technical archive in one maintainable system.
- Applied semantic HTML, accessibility checks, structured metadata, privacy controls and Linux/Nginx deployment practices.
- Kept public-safe documentation separate from private operational detail while retaining real evidence of systems administration.

Key areas: PHP, SQLite, HTML5, CSS3, JavaScript, LaTeX, Markdown, Nginx, Linux, Git, Let's Encrypt, SEO, accessibility, privacy-aware web design.

[Reference](#)

— EDUCATION

PhD in Electrical and Computer Engineering

2022–present

Faculty of Engineering, University of Porto

Supervisor: Prof. João Tasso de Figueiredo Borges de Sousa.

Research area: software-intensive interactive systems, machine perception, spatial/projection-based interaction, robotics-adjacent sensing and systems engineering.

Relevant activities:

- Previously led the Software and Computer Engineering department at Porto Space Team (INVICTUS, 2022–2023).
- Contributed to the ANTAEUS CubeSat project.
- Technical talks and workshops for engineering audiences.
- Research-to-deployment work connecting prototypes, users, evaluation and maintainable software.

Primary implementation language: C++. Used C++ throughout the PhD for spatial-interaction and systems research.

Key areas: C++, Projection-based AR, Pro-Cam systems, computer vision, machine perception, spatial interaction, systems engineering, experimental design, LaTeX, technical writing.

BSc in Computer Science

2017–2022

Faculty of Sciences, University of Porto

180 ECTS, of which 54 ECTS in Mathematics.

Activities and societies:

- Member of EUGLOH's Joint Curricula Design work package and Student Board (2020-07-13 → 2021-07-30)
- Member of the Faculty of Sciences' Pedagogical Council (2019-11-05 → 2022-06-17)
- Freshers' teaching assistant for the Computer Science Department (2019-09-10 → 2021-07-30)
- Founding member of the Hackers at Porto student society (since 2017-11-01)

Key contents:

- Mathematics – numerical analysis, stochastic processes, operations research, linear algebra, analytic geometry, multivariable calculus, differential equations
- Computing theory – graphs, logic and proof, computability, complexity, reactive systems
- Computer systems – computer architecture, computer networking, operating systems
- Programming – compiler construction, advanced algorithms and data structures, multiprocessor programming
- Applications and professionalism – intelligent systems, interaction design, security, privacy, databases
- Electrical engineering – automatic control, digital signal processing

Key areas: C, Java, Haskell, Prolog, SQL, Erlang, UNIX/shell, algorithms, data structures, concurrency, databases, networking, security, AI, numerical analysis, stochastic processes, control, signal processing.

Exchange studies – Entrepreneurial Skills (1.5 ECTS)

2021

Lund University School of Economics and Management (LUSEM) – Erasmus+/EUGLOH

The course introduces the development process of an entrepreneurial project, the entrepreneurial mindset needed for that process, and the dynamics of teamwork – skills called for by a global society facing challenges that need new, creative solutions under uncertainty.

It concluded with a two-day hackathon in which teams delivered a solution to a challenge in Global Health. Out of six competing teams, **ours was ranked best**.

Key areas: Lean validation, venture development, hackathon prototyping, market framing, problem-solution design, team delivery.

Exchange studies – Societal Resilience (7.5 ECTS)

2020

Lunds Tekniska Högskola (LTH), Lund University – Erasmus+/EUGLOH

The course provides an understanding of society's challenges and the functions necessary for resilience in the face of events threatening safety and sustainability, and of approaches for contributing to societal resilience through disaster-risk management and climate-change adaptation for sustainable development in a changing world. It also forms a foundation for research in these areas.

Designed around critical thinking on societal safety and sustainability, it is structured in modules with lectures, seminars and role-play that illuminate central concepts, questions, challenges and functions for societal resilience, following case studies from countries with different conditions.

Key areas: Risk analysis, systems thinking, disaster-risk management, climate-change adaptation, case-study analysis, role-play simulation.

— SPECIALISED TRAINING

CubeSat Concurrent Engineering Workshop 2023

2023

European Space Agency (ESA) Academy, ESA ESEC

A training week introducing university students to the concurrent design of a CubeSat mission. Guided by ESA experts, students learn to use COMET (Concurrent Model-based Engineering Tool) and to identify design drivers; divided into teams, they first create a subsystem concept and then realise an identified mission concept, function tree and product tree using concurrent engineering.

Key topics:

- Introduction to concurrent engineering, systems engineering and requirements – Robin Biesbroek
- CubeSat missions and technologies – Camille Pirat
- CubeSat architectures – Ilja Skrypnik
- Increasing RAMS for CubeSats – Silvana Radu

Fly Your Satellite! Design Booster – Training Week

2022

European Space Agency (ESA) Academy, ESA ESTEC

ANTAEUS, a prospective Fly Your Satellite! Portuguese team, attended this training week to deepen its knowledge of spacecraft design and project management.

Covered topics included: project management principles and COTS; legal aspects of CubeSat missions; communications and outreach; systems engineering principles; AIV and testing; introduction to MBSE; data-handling subsystem design and verification; flight-software development; EPS design and verification; structural, thermal and mechanisms design and verification; project management for CubeSats; AOCS design and verification; spacecraft operations; TT&C and ground segment; RAMS of CubeSats (FMEA, HSIA, FDIR); space-debris mitigation and trackability; and CubeSat mission analysis – delivered by ESA specialists including Alexander Kinnaird, Tomasz Szewczyk, Volkan Salma, Silvana Radu and David Evans.

Startups School

2020–2021

UPTEC – Science and Technology Park, University of Porto's business incubator

A programme designed to prepare entrepreneurs for the challenges of creating and developing a new business project. Over three months, participants work with new tools, concepts, structures and people that help validate an idea in the market.

Covered topics included: business models; patents and protecting intellectual property; differentiation and strategy; pricing, marketing and selling; problem mapping; public communication; structuring a pitch; fundraising from venture capital; doing business with the USA; taxes; term sheets; and digital marketing.

Introduction to Bayesian Statistics: Fundamentals, Methods and Applications

2020

CMUP · IST-UL (post-graduate mini-course)

Taught by professors Carlos Daniel Paulino and Giovanni Loiola da Silva, and promoted jointly by the University of Porto's Mathematics Centre (CMUP) and the University of Lisbon's School of Engineering (IST-UL).

Topics: Bayes' theorem and the essence of Bayesian methodology; representation of a-priori information (non-informative and natural conjugate distributions); applications to problems with exact or asymptotic solutions (linear Gaussian models, categorical data); inference by stochastic simulation and traditional Monte Carlo; model evaluation, selection and comparison; MCMC methods and their implementation in OpenBUGS/JAGS; applications to practical problems across scientific fields.

SUMMER & WINTER SCHOOLS

Cognitive and Affective Neurophysiology Summer School

2023

Faculty of Psychology and Education Sciences, University of Porto

A 36-hour course on the acquisition, processing and analysis of EEG signal, held at the Laboratory of Neuropsychophysiology. Topics included introductions to EEG and ERP, ERP research design, principles of EEG data collection, signal processing and data extraction, statistical analysis of ERP data, and reproducibility and open-science practices in EEG/ERP research – taught by Fernando Ferreira-Santos, Fernando Barbosa, Tiago O. Paiva and colleagues.

SYSTEC Summer School – Estimation, Control, Optimisation and Data Science

2022

Faculty of Engineering, University of Porto

Organised by the Research Centre for Systems and Technologies (SYSTEC) in collaboration with the ARISE associated laboratory, providing experience with applications of cyber-physical systems in robotics, energy, mobility, production systems and health.

Covered topics: introduction to drones; deep and machine learning; optimisation; path-following control for autonomous vehicles; optimisation in industrial settings; designing robotic solutions with freeware tools; and electric mobility case studies.

LSTS Summer School – Robotics for Ocean Observation

Aug–Sep 2020

Underwater Systems and Technology Laboratory (LSTS), FEUP

Introduction to Robotics for Ocean Observations, Archaeology and Ecosystems Mapping.

Topics and lecturers included: terminology and basic concepts in maritime robotics, and models, planning and control – João Tasso de Sousa (LSTS); sensors – Paulo Dias; vehicles – Maria Costa; underwater communications and multi-vehicle planning – José Pinto; the LSTS/OceanScan toolchain – Keyla Lima; AI in maritime robotics – Kanna Rajan (NTNU); ocean observation – researchers from PLOCAN, PROOCEANO, MaREI, CIIMAR and the MIT Media Lab; applications in archaeology – Filipe Castro (Texas A&M); mapping applications – Trygve Fossum (NTNU); the legal regime of maritime robotics – Eliana Silva Pereira (CIIMAR); and mechanical design – João Galante (LSTS).

EUGLOH Summer School on Biomedical Data Processing and Global Aspects of COVID-19 (4 ECTS)

2020

University of Szeged

Topics: biomedical data collection, signal processing and analysis; artificial intelligence and machine learning in natural-language processing, biological image analysis and gene-expression analysis; image-processing applications; from literature knowledge to mechanistic modelling; health data science and management; statistical decision making; and dissemination of scientific results.

EUGLOH Summer School on Large-Scale Facilities for Global Health (2 ECTS)

2020

Université Paris-Saclay

Large-scale facilities offer unique opportunities to explore materials and living matter. This four-day intensive course on the SOLEIL synchrotron, the MAX IV synchrotron and the ELI-ALPS laser centre raised awareness of how such facilities contribute to the European research landscape, giving an in-depth overview of career opportunities, operations, techniques and biomedical and environmental applications, and closing with practical sessions on applying for beamtime allocation.

CERTIFICATIONS & MICRO-CREDENTIALS

Cambridge English Level 2 Certificate in ESOL International – C1 (CEFR)

2021

Cambridge Assessment English

Credential ID B6703928. Scores: Reading 200 (grade A, C2); Use of English 201 (grade A, C2); Writing 190 (C1); Listening 193 (C1); Speaking 195 (C1).

Pedagogical Competences Certificate (CCP)

2024

IEFP – Portuguese Employment and Vocational Training Institute, and CRIAP Institute

Credential ID F751769/2024. Final grade: **5 – Excellent**.

Acquired competencies: analysing the context of intervention for a training programme; designing the programme; developing didactic and multimedia resources; planning learning activities; applying techniques of pedagogical interaction and group facilitation; managing diversity in the training context; using and managing collaborative and learning platforms; developing evaluation tools for training and learning outcomes; and assigning and reporting results.

Quadcopter Simulation and Control (droneX)

2021

Instituto Superior Técnico, University of Lisbon (MOOC Técnico)

Covered the modelling of quad-rotor drones (configurations, reference frames, block diagrams, dynamics); analysis of each

subsystem in Scilab/Xcos, from rotor actuation to the dynamic and kinematic equations linking forces and moments to motion; and control of quad-rotor motion – common control solutions, stabilisation of vertical and angular motion, horizontal guidance, and approximations towards a more realistic simulator.

Project Management Specialization

2023

Google, via Coursera

Covered the foundations of project management; project initiation; project planning; project execution; and Agile project management.

Strategic Leadership and Management Specialization

2023

University of Illinois Urbana-Champaign, via Coursera

Covered leading teams (developing as a leader; building effective team cultures), designing and managing the organisation, and business and corporate strategy.

Strategic Leadership: Impact, Change, and Decision-Making

2023

Dartmouth College, via Coursera

Covered why smart executives fail (common mistakes and warning signs); decision-making as a blend of art and science; superbosses – managing talent and leadership; and lessons on wisdom and personal leadership.

ECSS E-40 Software Engineering

2023

ESA Training on ECSS

Objectives: manage a software project for space and ground applications; understand the significance and procedures of the process; know what ESA expects; identify potential sources of project failure as early as possible; and bridge the system and software domains.

Transferable Skills for Engineering: Pedagogical Training (1.5 ECTS)

2022

Faculty of Engineering, University of Porto

Held 2022-10-08 to 2022-12-05. Objectives: pedagogical preparation of a course; learning objectives and skills; teaching strategies for large classes; introduction to learning assessment; and higher-education pedagogy.

Global Precipitation Measurement Mission (GPM) Mentorship

2024

University of Coimbra and NASA

A comprehensive learning experience blending theoretical understanding through a lecture series with hands-on practical training in a capstone project, guided by subject-matter experts. The capstone solidifies the learned skills and fosters close collaboration with leading scientists in the GPM community.

Advancing Learning Through Evidence-Based Teaching (Spring 2024 CIRTl Network MOOC)

2024

Center for the Integration of Research, Teaching and Learning (CIRTl)

Objectives: effective teaching strategies and the research that supports them; the value of learning through diversity and strategies to incorporate it in the classroom; and how to assess these pedagogical strategies and decide which to implement.

An Introduction to Evidence-Based Undergraduate STEM Teaching (Summer 2023 CIRTl Network MOOC)

2023

Center for the Integration of Research, Teaching and Learning (CIRTl)

Covered key learning principles such as the role of mental models and the importance of practice and feedback; fundamental elements of course design, including learning objectives and aligned assessment; and teaching strategies for fostering active learning and inclusive classroom environments.

Space for International Development Assistance

2024

ESA Global Development Assistance

An introduction to Earth observation (EO) for international development assistance and to Space for IDA, ESA's cooperation framework implemented in partnership with international financial institutions – a comprehensive overview of the impact of EO across sustainable-development contexts for decision-makers, policy-makers, educators and communicators.

Workshop “From Research to Patent”

2018

European Patent Office, INPI and University of Porto

Held 2018-10-10 to 2018-11-07. Comprehensive training on patent basics, intellectual-property rights and the patenting process, including European Patent Office procedures, with sessions on novelty/inventiveness, claims, patent searching (Espacenet),

developing an IP strategy and commercialising research results – delivered by Pedro Borges (EPO), Tiago Leitão, Luís Ferreira and André Fernandes.

Six Sigma Yellow and Green Belt Specialization

2023

University System of Georgia, via Coursera

Covered Six Sigma principles; tools for Define and Measure, Analyse, and Improve and Control; Six Sigma and the organisation (advanced); and the advanced Define/Measure, Analyse, and Improve/Control phases.

Auditores e Facilitadores em Acessibilidade Web – Selos Bronze e Prata

2023

AMA – Agência para a Modernização Administrativa, via Plataforma NAU

Web-accessibility auditing (Bronze and Silver seals).

EBEC Porto 24h – Team Design (1.5 ECTS)

2019

Faculty of Engineering, University of Porto

A 24-hour contest of engineering applied to automation, instrumentation and control (2019-03-16 to 2019-03-18). With my team, I developed a Rube Goldberg machine whose purpose was to hoist a flag; we scored 18 out of 20, placing among the ten podium teams out of forty.

Freedom of Expression and Safety of Journalists

2023

Bonavero Institute of Human Rights, Faculty of Law, University of Oxford, and UNESCO

SOE'22 Workshop – Space, Ocean and Earth Insights

2022

UT Austin Portugal Program

A five-hour training delivered jointly by the UT Austin Portugal Program, INESC TEC (through its Centre for Robotics and Autonomous Systems), the International Institute for Astronautical Sciences – Space for All Nations, the Porto School of Engineering (ISEP), the Faculty of Sciences of the University of Porto, the Portuguese Space Agency (PT Space) and the Luso-American Development Foundation (FLAD).

Communicating with Presence

2023

Stanford University School of Medicine

Teaching and Assessing Core Skills

2023

British Council, via FutureLearn

Tools and approaches for teaching and assessing core skills in the classroom.

Transferable Skills: Music and Society (3 ECTS)

2022

Casa da Música and Faculty of Engineering, University of Porto

Held 2022-02-09 to 2022-06-03. The course develops critical and informed listening across historical moments and artistic expressions; explores musical practice and its social contexts, from classical-concert curatorship to community intervention; examines the mechanics of musical creation (composition, interpretation, production and dissemination); and treats critical involvement with music as personal and interpersonal development.

Endangered Archaeology: Using Remote Sensing to Protect Cultural Heritage

2023

Durham University, British Council, University of Leicester and University of Oxford, via FutureLearn

Satellite remote sensing for identifying and monitoring threats to heritage sites and landscapes.

eDESK – Digital and Entrepreneurial Teachers for a Fast-Changing World

2023

NOVA University Lisbon, University of Cantabria, University of Zagreb and LUT University, via Plataforma NAU

Inside Digital Higher Education – Self-Assessment Guide for Educators

2023

Dublin City University, via FutureLearn

Critical reflection on digital transformation and strategic institutional responses.

U21 Global Citizenship

2020

Common Purpose

An experiential asynchronous course in which participants advance the UN Sustainable Development Goals, earning a pass in each

of the five Open Source Leadership skills assessments and a post-programme reflective assessment: "How am I going to step up as a Global Citizen and advance my Sustainable Development Goal?"

Introduction to Classified Information Security 2023

GNS – Gabinete Nacional de Segurança de Portugal, via Plataforma NAU

Social Learning and Collaboration in School: Learning to Thrive Through Play 2023

The LEGO Foundation, via FutureLearn

How children learn through play and develop social and collaboration skills.

Mechanical Ventilation for COVID-19 2023

Harvard Medical School

GDPR for Mindful Citizens 2023

Instituto Nacional de Administração, via Plataforma NAU

Company Strategy and Project 2020

IAPMEI – Financial Training for Entrepreneurs

The Future of Industry 2023

Porto Business School, via Plataforma NAU

Technological Entrepreneurship 2023

Porto Business School, via Plataforma NAU

Academia de Empreendedorismo (1 ECTS) 2023

NOVA University Lisbon, via Plataforma NAU

Introduction to the Learning Through Play Experience Tool 2023

The LEGO Foundation, via FutureLearn

Chinese Language and Culture 2020

Confucius Institute, University of Porto

Held April–May 2020. Topics: China and the Chinese language; Chinese cuisine; Chinese geography and tourist attractions; and the Chinese lifestyle.

— SEMINARS, PRESENTATIONS & WORKSHOPS

GNU social v3 and Unbound Actors 2022

15th U.Porto Young Researchers Meeting (IUP)

A presentation of FEP-2100 – its context and how we created it. **Distinguished as the Best Oral Communication in the Engineering area** of this edition.

Introduction to Git: Mastering Version Control 2023

Symposium on Electrical and Computer Engineering, DCE23 – Doctoral Congress in Engineering, University of Porto

DCE23, the Doctoral Congress in Engineering, was held on 15–16 June 2023 at the Faculty of Engineering of the University of Porto. This hands-on workshop gave participants the fundamental concepts of version control and the features Git offers for code – or any text, including a thesis.

Topics: `rsync`, `diff` and `patch`; an overview of revision-control systems with briefings on RCS and Subversion; configuring Git and setting up GPG for signed commits; hands-on practice with many Git commands; tags; branching and merging; storage areas; a brief look at Git internals; and version-control etiquette.

[Workshop text](#)

Algorithms – Documentary TV Series, Ep. 4: Public Space 2022

RTP 3, television

A series of six thematic television documentaries addressing essential technological questions: cryptocurrencies and blockchain,

social networks and the public space, artificial intelligence and privacy. I discussed the impact of algorithmic decision-making on the content we consume and the discussions we have.

Dependable Computing

2023

Faculty of Engineering (via Porto Space Team) and Faculty of Sciences (via NuCC-FCUP and Hackers at Porto), University of Porto

A one-hour talk delivered twice in May 2023 – on the 4th at the Faculty of Engineering via Porto Space Team, and on the 17th at the Faculty of Sciences via NuCC-FCUP and Hackers at Porto.

Topics: model-driven development; introduction to real-time embedded systems (with emphasis on hard real time); functional, temporal and dependability requirements; execution management; introduction to reliability, availability, maintainability and safety (RAMS); architecture and components in space avionics; and safeguard mechanisms, with emphasis on redundancy.

[Technical article](#)

Real-time Embedded Systems

2023

Spaceway – “Software & Data Engineering in Space” online course

A four-hour lecture in Spaceway's online and live course “Software & Data Engineering in Space”. Topics: model-driven development; real-time modelling, scheduling and RTOS; execution management; reliability, availability, maintainability and safety (RAMS); software development methodologies; architecture and components; safeguard mechanisms; and memory management.

ANTAEUS – Computing in Space

2023

Jornadas do Espaço – do Laboratório para a Órbita, Universidade da Beira Interior

A one-hour talk using the ANTAEUS CubeSat as its main case study. Topics: execution management; RAMS; software development methodologies; architecture and components; electronic components; on-board buses and interfaces; determinism; and safeguard mechanisms.

[Technical article](#)

NGI Breaks Down Walls: Decentralise Social Networking with ActivityPub

2021

NLnet, online event

As a developer of the federated universe, I contributed to the first webinar of this event, in which representatives of the European Commission, the European Data Protection Supervisor and the European Parliament discussed the possibilities of federation and how the European Commission could announce relevant events on the fediverse. Through two webinars and a workshop, NGI Zero and the ActivityPub community showcased to national and European administrations how the decentralised social-networking protocol ActivityPub can help European institutions retake their online presence.

A Tour of ActivityPub – Getting to Know the Modern Fediverse

2019

Talks@DCC, Faculty of Sciences, University of Porto

ActivityPub is a decentralised social-networking protocol based on the ActivityStreams 2.0 data format: a client-to-server API for creating, updating and deleting content, and a federated server-to-server API for delivering notifications and content. This Talks@DCC took a small tour through the history of the fediverse, the context in which ActivityPub was introduced, and the internals of its implementation – among other challenges in the software and network engineering of a federated social network – ending with the advantages of this kind of platform and the technical complications of building and maintaining one.

[Slides](#) · [Seminar notes](#)

IndieWeb and Decentralised Social Networks

2021

NuCC Update 2021, online

A brief introduction and overview of an initiative started in 2011 that has been gaining popularity. The talk explored the principles and values of privacy, participation and diversity of this vibrant network, contrasting them with the selfish business practices of the non-neutral exchange platforms populating the rest of the Internet.

[Recording and slides](#)

HaP Day – My First Operating System

2018

Hackers at Porto (HaP) – Department of Computer Science, Faculty of Sciences, University of Porto

Co-delivered a hands-on workshop on the fundamentals of operating-system development, following the construction of a small OS from the bootloader through to a working shell. The workshop covered low-level boot and execution concepts, x86 Assembly and C, and practical development and debugging using NASM, QEMU and GDB/GEF.

Key areas: C, x86 Assembly, NASM, QEMU, GDB, GEF

[Reference](#) · [Workshop material](#)

Mentoria FCUP at the I Meeting of U.Porto's Transversal Programme of Peer Mentoring

2019

Grand Auditorium, Faculty of Engineering, University of Porto

I presented a summary of the development and results of the Faculty of Sciences' mentoring programme at the first meeting of U.Porto's transversal programme of peer mentoring.

Introductory Workshop to Robotics

2018

Happy Code, Maia, Portugal

A three-hour workshop about automation science, complex systems, digital electronics, the Internet of Things, and how those relationships enable the making of robots – with a detailed practical component using sensors and actuators to illustrate the concepts.

— HONOURS, AWARDS & GRANTS

Best work – Multimedia Communications Technologies, Summer@CTM 2022

2022

INESC TEC

My internship on parametric human-body models was distinguished as the best of the MCT category by the jury of the Summer@CTM 2022 internship programme.

Best Oral Communication – Engineering

2022

15th U.Porto Young Researchers Meeting (IJUP 2022)

“GNU social v3 and Unbound Actors” was distinguished as the best oral communication in the Engineering area.

NGIO Discovery Fund grant

2021

European Union Horizon 2020 – grant agreement No 825322

Funding awarded through the EU's Horizon 2020 research and innovation programme (2021-02 to 2022-02) to lead the development of GNU social v3.

Best team – Global Health hackathon

2021

Lund University School of Economics and Management (EUGLOH)

Our team ranked best among six in the two-day hackathon closing the Entrepreneurial Skills module.

StartUP Voucher (full grant) and Grant for the Web flagship grant

2020

IAPMEI · Grant for the Web – for Kult

Kult received IAPMEI's StartUP Voucher full grant (2020-06 to 2021-06) and a Grant for the Web flagship grant (2021-06 to 2021-12).

Research grant (BII)

2020

Portuguese Foundation for Science and Technology (FCT)

Research initiation grant supporting the robotics internship at LSTS, FEUP.

Podium – EBEC Porto 24h Team Design

2019

BEST Porto, Faculty of Engineering, University of Porto

Scored 18/20 with my team, placing among the ten podium teams out of forty.

— TESTIMONIALS

“Amazing understanding of general software-engineering principles and of web standards (such as semantic HTML, ARIA, ActivityPub), a great project coordinator and a great writer.”

— Hugo Sales, Visrez, full-stack developer

“Proactively seeking to gain knowledge in many different areas, has a lot of attention to detail and goes to great lengths to read a lot of material in order to keep himself informed and be able to help others as well. This showed clearly during our time at college, both as a colleague during classes and also as a student representative, as well as in his work on extracurricular projects.”

— José Miguel Marques, Ubisoft Montpellier, QA programmer

“Diogo has an inquisitive mind, with broad interests in control, computation, digital culture, and entrepreneurship. His written work is excellent. He has a very organised mind and the technical foundations to address and solve complex problems. Diogo is bright, intelligent, a team worker, efficient, effective, very pleasant to work with, very serious about research and strongly committed to pursuing research in the interest of society.”

— João Tasso de Sousa, Head of LSTS — Underwater Systems and Technology Laboratory, FEUP

“We have exchanged opinions on research topics in the fields of physics, complex systems, and computing. I recognise his high capacity for problem analysis, communication, critical thinking, and teamwork.”

— João Gama Oliveira, Laboratory of Instrumentation and Experimental Particle Physics (LIP), visiting researcher

“Diogo entered our first degree in Computer Science at the University of Porto in September 2017. Being one of his professors during the degree, I could watch him show a good knowledge of the field, ability to learn new matters, ability to work with others, initiative and originality, willingness to work towards goals, motivation and seriousness, open-mindedness, and emotional stability and maturity.”

— Eduardo Marques, Professor of Computer Science, Faculty of Sciences, University of Porto

“Inquisitive, introspective and continuously growing, a true scientist. One of the best software professionals I have ever met.”

— Tiago Magalhães, Systems engineer, MEng in Computer Graphics

“As a Diogo mentee, I was always guided when tasks turned out to be more difficult and provided with the necessary attention to discuss ideas. Besides, Diogo never gave me solutions, but hints or suggestions of places to look at. Diogo perfectly balanced his interactions with me and, as a result, my Google Summer of Code experience was the richest possible. His passion for the project was positively contagious. It was a pleasure to work with him and I am sure I will keep contributing to GNU social.”

— Bruno Casteleiro, Computer scientist

“I wanna give a shout-out to Diogo, who produces quality code fast. It's really cool to work with him!”

— Daniel Supernault, Pixelfed maintainer

“Active, persistent and productive.”

— Mikael Nordfeldth, GNU social maintainer

“A brilliant man, in a relationship with his surroundings, constantly seeking the truth. An excellent asset to any company.”

— Gonçalo Oliveira, Software engineer

“Simply amazing. Diogo manages to turn abstract ideas into reality in a simple and effective way.”

— Phablulo Joel, Federal University of Pernambuco (UFPE), software researcher

— SOFTWARE & PROJECTS

SotA Lens

2026

An open-source toolkit for exploratory literature mapping through citation networks. A Python pipeline turns scholarly metadata into inspectable graphs and browser-ready datasets; a static explorer keeps local files in the browser.

Key areas: Python, NetworkX, JavaScript, GEXF

[Repository](#) · [Interactive explorer](#) · [Software DOI](#)

MinuteArc

16 November 2025

A focused weekly time and task tracker with goals, streaks, manual corrections, a live timer, reports, exports and team workspaces. The current launch has no billing, paywall or trial countdown.

Key areas: Weekly goals, Tasks, Live timer, Reports, PWA, Teams

[Open public beta](#)

Virtual Glasses Try-On

Spring 2023

PhD year 0 · Spring term

A real-time eyewear try-on built from one TypeScript codebase. MediaPipe landmarks drive frame position and perspective while face-aware occlusion keeps the temple arms behind the head.

Key areas: TypeScript, MediaPipe, Vite, Capacitor, PWA

[Try in browser](#) · [Repository](#)

Multi-application spatial AR

PhD, 2022–present

My PhD work explores multi-application spatial augmented reality, with C++ as the main implementation language.

Key areas: C++, Spatial augmented reality, Systems research

Monthly Diet Planner

January 2026

Generate a Portuguese-language monthly meal plan and shopping list from adult inputs, a small curated catalogue and Open Food Facts product data.

Key areas: PHP, Meal planning, Shopping list, Open Food Facts

[View experiment](#)

Simple Interest Calculator

January 2026

Compare deposits and cash products with separate terms, crediting frequencies, periodic top-ups, tax assumptions and annualised net returns.

Key areas: Deposits, Interest, Tax, Comparison

[Open calculator](#) · [Source](#)

Multirest Telegram Bot

2023–2026

A quick way to check weekly U.Porto canteen menus without repeatedly opening the supplier website. It formats the menu by weekday and provides direct commands for several faculties.

Key areas: PHP, Telegram, U.Porto, Webhook

[Open in Telegram](#) · [Repository](#)

STCP Chatbot

2023–2026

A shared interface for Porto public-transport information. It handles expected passages, route lookup and platform-specific favourites through Telegram, Discord and encrypted Matrix conversations.

Key areas: PHP, SQLite, Telegram, Discord, Matrix, E2EE

[Telegram](#) · [Discord](#) · [Matrix](#) · [Source](#)

Cinematic Stage Recording

2022–2023

A ROS 2 and Gazebo prototype that uses a fixed depth camera above a stage to infer the spatial extent of the action and automatically reposition a differential-drive RGB camera platform.

Key areas: ROS 2 Humble, Ignition Fortress, Python, OpenCV, Depth cameras, Robot control

[Repository](#) · [Paper](#) · [Slides](#)

Image Classification

Autumn 2022

Personal project · PhD year 0, autumn term

A configuration-driven PyTorch toolkit for training, evaluating and running image classifiers on arbitrary folder datasets, with explicit splits, augmentation, checkpoints and reproducibility metadata.

Key areas: Python, PyTorch, torchvision, Docker, GitHub Actions

[Repository](#)

Unbound Group and Organization

2022–2025

A design for linking Group or Organization actors so communities could cooperate across independent servers. I withdrew it when I could not give it the sustained time needed.

[Read proposal](#) · [Discussion](#)

IndieAuth

2022

Corrected request-URI validation logging.

[View contribution](#)

Web Monetization

2022–2023

A proposal co-authored with Phablulo Joel exploring Web Monetization information in ActivityPub. The discussion later informed the newer Payment Links draft.

[Read proposal](#) · [Payment Links draft](#)

Symfony #42271

2021

Proposed configurable permissions and stricter defaults in HttpFoundation file handling.

[View contribution](#)

LSTS/glued #42

2020

Adds Cortex-A72 architecture support; it is not presented as accepted work.

[View contribution](#)

Compiler and coursework archive

2019–2026

Russel! is a Haskell compiler for a small Rust-like language. A separate archive preserves selected coursework and teaching prototypes with their original licences and attribution.

Key areas: Haskell, Compilers, Algorithms, Numerical methods, Robotics

[Russel! compiler](#) · [Academic archive](#)

XMPPHP

2019

Maintenance of an established PHP library for communicating with XMPP services, preserving the original authors' attribution and project history.

[Maintained fork](#)

Nautilus

2019

Simplified digest construction in an IndieWeb reader.

[View contribution](#)

FreshSplash

2018–2026

A self-hosted wallpaper community with a hardened PHP upload service, gallery and API, paired with an atomic GNU/Linux client and systemd user timer.

Key areas: PHP, SQLite, POSIX shell, systemd, Docker
[Repository](#) and [deployment guide](#)

awesome-prolog

2018

Added and corrected YAP, REPL and coding-guideline resources.
[View contribution](#)

repl.vim

2018

Added SWI-Prolog support to the editor integration.
[View contribution](#)

libcfu

2018

Added list-data deletion and a configurable free callback.
[View contribution](#)

GNU social extensions

2018–2019

Plugins and supporting components around federation, browser integration and metadata discovery.
[ActivityPub plugin](#) · [NodeInfo](#) · [Browser notifications](#)

Spotlight Wallpaper

2018–2026

A dependency-light POSIX-shell command that downloads a Microsoft Spotlight landscape image, validates it and atomically updates a configured wallpaper file.

Key areas: POSIX shell, curl, Python, GNU/Linux
[Repository](#)

Fun with Binary

2018–2026

An interactive browser-and-ESP8266 exercise for learning binary representation through six switches, live sums and optional physical LED feedback. It is still used at the University of Porto.

Key areas: JavaScript, ESP8266, Arduino, Teaching
[Play online](#) · [Repository](#)

— PUBLICATIONS & WRITING

Little Coders

2026

Diokin Owl and Diogo Peralta Cordeiro

A playful introduction to coding, robots, algorithms, loops, binary, pixels, networks and password safety. Available in English, Portuguese, Spanish and French.