



Julio César Fernández Kolmer

Electronic Physicist — Technology Programmer

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Education

- **B.Sc. in Physics (Specialization: Electronics and Control Systems)**, Universidad Complutense de Madrid (UCM), 2022 – Present
 - Specialized curriculum focused on **Applied Electronics, Control Theory, and Instrumentation**, equivalent to the core technical competencies of Electronic Engineering.
 - Key Coursework: Circuit Theory, Semiconductor Physics, Digital Systems Design, Control Systems, and Signal Processing.
 - Advanced proficiency in analyzing complex systems from physical principles to hardware implementation.

Professional Experience

- **EEE Components Engineer Intern**, Airbus Crisa, May 2025 – Present
 - Managing EEE (Electrical, Electronic, and Electromechanical) parts lifecycle for aerospace projects, ensuring compliance with **ECSS-Q-ST-60C** standards.
 - Performing component selection and technical evaluation based on reliability, quality levels, and radiation hardness (TID/SEE) requirements.
 - Executing product assurance tasks, including the review of **PADs** (Part Approval Documents) and coordinating testing protocols (DPA, LAT, and Screening).
 - Analyzing component derating and Safe Operating Area (SOA) to ensure hardware robustness and mission longevity in extreme environments.
- **President**, Robodinámica (UCM Robotics Association), 2023–Present
 - Leading the association, organizing events, and promoting youth engagement in robotics and technology.
 - Designing and building autonomous robot followliner applying route optimisation achieving 50% better performance than human control.
 - Directed activities for the Semana de la Ciencia (Science Week) at UCM, fostering collaboration between students and faculty.
 - Manage the Robodinámica social media account on Instagram: <https://www.instagram.com/robodinamica/>
 - Github: <https://github.com/robodinamica-ucm>
 - Website: <https://robodinamica-ucm.github.io/>

- **Team Lead & Electronic Designer**, Eurobot International Competition, 2023–Present
 - Leading a multidisciplinary team in the design and construction of fully autonomous robots, applying **Systems Engineering** principles for subsystem integration.
 - Designing custom multi-layer **PCBs**, managing power distribution networks (PDN) and signal conditioning for high-speed sensors and motor drivers.
 - Implementing real-time navigation algorithms and sensor fusion (LiDAR, Encoders, IMU) using protocols such as **I2C, SPI, and CAN bus** to ensure low-latency response.
 - Coordinating hardware-software co-design workflows, emphasizing **Design for Manufacturing (DFM)** and rapid prototyping to meet strict competition deadlines.
- **Technology Programmer**
 - Developed software and algorithms for AI, robotics, and physics-related projects.
 - Implemented machine learning models for robotics systems and physics simulations.
- **Member of the Academic Commission**, Universidad Complutense de Madrid (UCM), 2022–2025
 - Collaborated in academic decision-making and contributed to improving the student experience.
 - Gained insight into academic policy and institutional development, focusing on enhancing the quality of education at UCM.

Skills

- **Programming Languages:** Proficient in Python, C++, Java; experienced with Selenium, Arduino, MIT App Inventor, and MicroPython.
- **Operating Systems & DevOps:** Proficient in **Linux** environments (Ubuntu, Debian, Arch); experienced in **Bash scripting** for workflow automation, advanced CLI system administration, and version control using **Git** for collaborative hardware/software development.
- **AI & Robotics:** Strong theoretical and practical knowledge, including hands-on project implementation.
- **Simulation Tools:** Skilled in Ansys (for FEA/CFD) and DiffractMOD (for optical modeling).
- **Leadership & Teamwork:** Proven ability to manage technical projects, coordinate teams, and deliver results under deadlines.
- **Communication:** Effective public speaker with experience presenting complex technical concepts to diverse audiences.
- **Circuit Design:** Adept at designing and prototyping electronic circuits using datasheets for component analysis and optimization.

Projects on GitHub

- **Java & Selenium:** Automated testing frameworks for web applications.
- **C++:** Development of physics simulation software for quantum experiments.
- **Python:** Machine learning projects and data analysis tools for physics research.
- **Arduino & Micro-Python:** Embedded systems projects for robotics and automation.
- **App Inventor:** Mobile apps for educational purposes related to physics and robotics.

Achievements

- **Third Place**, UCM Volleyball Team, Copa del Rector 2024.
- **Fourth Place**, Spanish Physics Olympiad, 2024.
- **Second Place**, "Plancks" Physics Competition, University of Complutense Madrid.
- Led **Robodinámica** to increase engagement in STEM initiatives, inspiring youth through workshops and competitions.
- Seventh place in our first year competing in the **Eurobot International Competition**

Languages

- Spanish: Native
- English: Fluent, B2 level
- French: Basic

Motivation and Leadership

- **Technical Leadership in International Competition:** Led a multidisciplinary robotics team for **Eurobot**, coordinating hardware and software integration while managing strict project timelines and technical trade-offs to ensure system reliability under competition stress.
- **Adaptability and Resilience in High-Stakes Environments:** Demonstrated high learning agility during my EEE internship at **Airbus Crisa**, successfully navigating initial technical uncertainty to master complex Product Assurance (PA) protocols and EEE component reliability standards.
- **Strategic Management of Technical Communities:** As President of **Robodinámica**, I have fostered a culture of innovation, scaling the association's impact through events and scientific outreach, effectively bridging the gap between academic theory and practical engineering application.
- **Accountability in Quality Assurance:** Developed a leadership mindset focused on **Product Excellence**, understanding that the EEE Manager's role is critical for mission success, ensuring that every component meets the highest aerospace standards (ECSS).
- Gained significant experience in public speaking and communication through my role as a member of the Academic Commission at UCM and through organizing and presenting at events like the Semana de la Ciencia.
- Managed Robodinámica's social media, engaging with a broader audience and communicating about robotics and technology initiatives to inspire the next generation of engineers.