Miguel Álvarez Domínguez

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Software engineer (dual M.S., ICAI) shipping ML/AI end-to-end: from a vision-based autonomous drone policy trained from scratch to LLM-based internal automation tools built for BMW's ADAS engineering team.

EXPERIENCE

ARRK Engineering GmbH| Munich, Germany *April 2026 – Current*
ADAS Function Development Analyst

- Developing and validating longitudinal control algorithms for BMW Level 2+/3 driver assistance systems, with a focus on in-vehicle testing and real-world passenger comfort.
- Building web apps with MCP + LLM pipelines to automate documentation and quality-reporting workflows across the team.

Trustworthy Robotics and AI Lab (TRAIL), IIT| Madrid, Spain *September 2025 – July 2026*
Graduate Research Assistant

- Designed and trained a vision-based, end-to-end neural network policy mapping raw RGB images directly to thrust/body-rate commands for autonomous FPV drone navigation, with no privileged state.
- Built a photorealistic, GPU-parallel training pipeline in NVIDIA Isaac Lab (PPO, asymmetric actor-critic) simulating 128 parallel environments with randomized obstacles; reaching 90.9% course completion with a 3.7% collision rate.

Accenture | Madrid, Spain *June 2025 – August 2025*
MBSE and Digitalization Engineering Intern

- Contributed to a strategic digital transformation project across multiple industries.

Acerinox, S.A. & Instituto de Investigación Tecnológica (IIT) | Madrid, Spain *September 2024 – April 2025*
Engineering Research Intern

- Applied ML and genetic algorithms to optimize Acerinox's shipment logistics and built a React/Django web UI to launch and visualize results.

ICAI SocialTech Challenge Team | Madrid, Spain *September 2024 – June 2025*
Path Planning and Tracking Control Engineer

- Developed an autonomous mobile chair for use in office environments using ROS2, improving accessibility.

Cornell University | Ithaca, NY, USA *October 2023 – June 2024*
Undergraduate Research Assistant / High Frequency Power Electronics Group

- Developed an FPGA controller for high frequency inverters for EV capacitive wireless charging, with 86% efficiency.

EDUCATION

Universidad Pontificia Comillas, ICAI | Madrid, Spain *September 2024 – May 2026*
Master's degree in Industrial Engineering, **9.41/10** | Master's degree in Smart Industry, **9.78/10**
Relevant coursework: Machine Learning, Deep Learning, Cloud Computing, AI Automation, Cybersecurity

Cornell University | Ithaca, NY, USA *August 2023 – May 2024*
Exchange program. Bachelor's degree in Electrical and Computer Engineering, **4.108/4.3**
Relevant coursework: Embedded Systems, Power Electronics, Fast Robots (miguelalvarezd.github.io/FastRobots)

Universidad Pontificia Comillas, ICAI | Madrid, Spain *September 2020 – May 2024*
Bachelor's degree in Engineering for Industrial Technologies, electronics branch, **9.39/10**
Relevant coursework: Digital Electronics, Dynamic Systems, Automatic Regulation

SKILLS

Programming Languages: Python (scikit-learn, PyTorch, ROS2, Django), C, MATLAB
Data, Web & SW Tools: SQL, Git, React, Django, Jira, Docker, AWS
Hardware: Arduino, FPGAs (Quartus, VHDL), Microcontrollers (ARM Assembly), PCB Design (Altium)
Languages: Spanish (native), English (bilingual proficiency)

TITLES, AWARDS, AND CERTIFICATES

1st Place – IX Hackathon for Smart Industry (ICAI + Acerinox) *October 2024*
Developed an AI-driven client acquisition platform using web scraping and a user-focused interface.

2nd Place – X Hackathon for Smart Industry (ICAI + Kearney & CAF) *October 2025*
Developed an app that auto-standardizes incident reports and matches them with AI to the most probable historical fault, surfacing solutions in real time; Power BI dashboards support predictive maintenance for CAF's train fleet.

Beca de Excelencia de la Comunidad de Madrid *2021, 2022, 2023, 2024*
Scholarship for university students with excellent academic achievement.