Mark Benazet Castells

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Profile

Robotics Master's student specializing in autonomous systems and computer vision. Focused on developing innovative solutions for unmanned aerial vehicles (UAVs) with experience in thermal imaging and geolocation technologies for wildlife monitoring applications.

Education

ETH Zürich, MSc in Robotics, Systems, and Control   Sep 2024 – Present

- Relevant Courses: Probabilistic Artificial Intelligence, Planning and Decision Making for Autonomous Robots, and Vision Algorithms for Mobile Robotics

Institute of Science Tokyo, Graduate Exchange Student   Apr – Aug 2025

- Relevant Courses: Statistical Learning Theory, Advanced Machine Learning, and Advanced Topics in Artificial Intelligence.

ETH Zürich, BSc in Mechanical Engineering   Sep 2021 – Sep 2024

- GPA: 5.56/6.0
- Relevant Courses: Autonomous Mobile Robots, Programming for Robotics and Robot Dynamics.
- Thesis: *Wind-Aware Kinematic MPCC Formulation for Fixed-Wing Guidance* - Developed and validated a model predictive contouring controller for a fixed-wing UAV that maintains precise path-following and respects kinematic limits under strong wind conditions.

Experience

NOCTUA, Robotics Engineer   Sep 2023 – Present

- Co-developed and transitioned a student-led, long-endurance fixed-wing UAV system into a formal ETH research project for wildlife monitoring.
- Implemented the thermal-imaging software pipeline to detect heat signatures in real time.
- Designed the geolocation module to publish heat signature coordinates to the flight controller.
- Assisted with tuning and testing the final product to validate drone flight performance.

IDSC | ETH Zürich, Teaching Assistant for Control Systems 1   Sep 2024 – Jan 2025

- Delivered interactive course content including Jupyter notebooks.
- Guided students through hands-on exercises and examples.

IDSC | ETH Zürich, Laboratory Assistant for Applied Control Systems   Aug 2023 – Jan 2025

- Guided students during lab experiments and helped to interpret experimental results.

OMEL | ETH Zürich, Teaching Assistant for Quantum Mechanics   Feb – Sep 2024

- Developed comprehensive weekly theory sheets and lecture slides, delivering instruction to a consistent group of 50 students to enhance concept retention and application.

Honours and Awards

Institute of Science Tokyo Fund Scholarship, Institute of Science Tokyo   Feb 2025

Skills

Technical: C++, Python (NumPy, OpenCV, PyTorch, CasADi, ACADOS), ROS 1 & 2
Tools & Platforms: Git, Linux, LaTeX, MATLAB, CUDA
Languages: English, Spanish & Catalan (native); German (fluent)