# Mark Benazet Castells

Zürich, Switzerland | markbenazet17@gmail.com
+41 76 271 18 82 | markbenazet.github.io
linkedin.com/in/mark-benazet-castells | github.com/markbenazet

## Profile

Master's student in Robotics at ETH Zürich focused on robot learning and autonomous systems. Developing preference-based learning methods for agile drone flight with real-world deployment on physical quadcopters. Passionate about embodied AI that bridges theory and real robotics applications.

## Skills

**Robotics & Control:** Model Predictive Control (MPC), Preference-Based Learning, Reinforcement Learning, Classical & Modern Control Techniques, System Identification
**Languages & Frameworks:** Python (PyTorch, NumPy, CasADi, Acados), C++, ROS 1/2
**Tools:** PX4, Gazebo, MATLAB, Linux, Git, LaTeX
**Languages:** English (native), German (fluent), Spanish & Catalan (native)

## Experience

**Robotics Engineer**, NOCTUA | ETH Zürich — Sep 2023 – Present

- Built a flying fixed-wing prototype; developed ROS 2 geolocation and detection modules, integrated PX4, and validated via 100+ km of autonomous flight.

**Research Assistant – Robotics**, IDSC | ETH Zürich — Jul 2025 – Present

- Conducting research in learning-based and optimization-driven control, with real-device validation and industry collaboration on embedded control systems.

**Teaching Assistant**, IDSC & OMEL | ETH Zürich — Aug 2023 – Jan 2025

- Created 10+ Jupyter notebooks used by 400+ students to master classical control concepts.
- Led weekly tutorials of Quantum Mechanics for 80+ students and developed a course script.
- Supported 100+ students in hands-on labs implementing real-world control systems on robotic platforms.

## Projects

**Agile Drone Maneuvers through Preference-Based Learning**, RPG | UZH — Sep 2025 – Present

- Developing a preference-based learning framework for agile quadrotor maneuvers using human feedback, replacing hand-crafted rewards, with ongoing implementation and testing on physical drones.

**Learning-Based Control for Embedded Industrial Systems**, IDSC - HILTI| ETH Zürich — Jul 2025 – Present

- Performed system identification and learned non-parametric residual dynamics from hardware-in-the-loop data, improving model accuracy by >60% for embedded robust control.

## Education

**ETH Zürich**, MSc Robotics, Systems & Control — Sep 2024 – Present

- Current GPA: 5.6/6.0

**Institute of Science Tokyo**, Graduate Exchange — Apr 2025 – Aug 2025

- GPA: 97.35%

**ETH Zürich**, BSc Mechanical Engineering (Robotics, Systems and Control Specialization) — Sep 2021 – Sep 2024

- GPA: 5.56/6.0 (Top 4% of cohort)