Adrià López Escoriza

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EDUCATION

ETH Zürich Sep. 2021 – April 2024
MSc Robotics, Systems & Control (RSC), GPA: 5.8/6 (Distinction) *Zürich, Switzerland*
- Relevant Courses: Large Language Models, Machine Perception, Game Theory and Control, Deep Learning, Planning and Decision Making, Vision Algorithms for Mobile Robotics.
- Master's Thesis: Hierarchical World Models for Goal-Conditioned RL.

Universitat Politécnica de Catalunya Sep. 2017 – July 2021
BSc in Telecommunications Engineering (ETSETB) *Barcelona, Spain*
- Bachelor Mobility Program at Electrical Engineering (ITET) Department of ETH Zürich.
- Total ECTS: 240. All credits obtained on first call. Graduated in Top 5%.
- Main focus on signal processing, communication systems and electronic control.

RELEVANT EXPERIENCE

Robotics and AI Institute Jan. 2025 – July 2025
RAI Institute | RL, Humanoids *Zürich, Switzerland*
- Research Internship advised by Prof. Marco Hutter.
- Working on humanoid loco-manipulation through Reinforcement Learning.

DEMO3: World Models for Sparse Rewards June 2024 – Dec. 2024
SU Lab, UCSD | Research Internship, Reinforcement Learning, World Models *San Diego, USA*
- Research Internship on Data-Driven RL advised by Prof. Hao Su
- Proposed a framework for model-based RL for long-horizon tasks with sparse rewards.
- Accepted at **ICML 2025**.

Master's Thesis: Hierarchical World Models for RL Aug. 2023 – April 2024
VIS, CVL, ETH | Master Thesis, Reinforcement Learning, Visual Intelligence *Zürich, Switzerland*
- Advised by Prof. Fisher Yu.
- Designed a CoT World Model, capable of short-term prediction and key frame forecasting.
- Develop a goal-conditioned reinforcement learning framework capable of hierarchical planning.

Motion Planning Intern Sep. 2022 – April 2023
Motional | Autonomous driving, High-level Planning *Singapore, Singapore*
- Working on convex corridor generation and witness verification.
- Benchmarked the pre-existing planning pipeline to find bottlenecks in scenarios with several dynamic obstacles.
- Prototyped and tested new corridor generation pipeline capable of a wider range of driving maneuvers.

Semester Project: GPS Waypoint following March 2022 – July 2022
Ascento, ETH | State estimation, Control, ROS *Zürich, Switzerland*
- Developed a full autonomous pipeline for carrying out waypoint following missions.
- Sensor fusion of odometry and GPS measurements and control algorithm in ROS.

Data-Driven State Estimation Sep. 2020 – Sep. 2021
AMZ Driverless | Autonomous Racing, Velocity Estimation, Python, C++ *Zürich, Switzerland*
- Design and implementation of state of the art Kalman Filter for ego motion estimation at high speed conditions.
- Implantation of safety and redundancy systems for low level autonomous system control in a driverless racing car.
- 1st place in Daimler AI Award for having the most innovative and practical AI solutions for autonomous driving.
- 3rd overall place in Driverless category + 2nd place in design category at Formula Student Germany.

Simultaneous Localization And Mapping Sep. 2019 – Sep.2020
BCN eMotorsport | Autonomous Racing, SLAM, ROS, C++ *Barcelona, Spain*
- Part of the first Formula Student Driverless team in Spain.
- Designed an online SLAM system from LiDAR observations and raw GPS data.
- SLAM and state estimation for autonomous racing.

Publications

DEMO3 | *Reinforcement Learning, World Models, Reward Learning*   Jan. 2025
- Accepted at ICML 2925.
- Multi-Stage Manipulation with Demonstration-Augmented Reward, Policy, and World Model Learning.
- Designed specifically for long-horizon manipulation tasks with sparse rewards and visual inputs.
- Achieved a 70% improvement over previous SOTA sample efficiency in challenging tasks.

Data-Driven State Estimation for Autonomous Racing | *Velocity Estimation*   Aug. 2021
- Published at the International Conference on Autonomous Systems (ICAS) 2021.
- Work done in collaboration with the Signal and Information Laboratory (ISI) at ETH Zurich and AMZ Driverless.
- Implementation of KalmanNet in a real autonomous racing car with the intention to simplify the sensor setup.
- Deployment of KalmanNet in an ETAS Electronic Control Unit embedded in the autonomous race car.

KalmanNet | *State estimation, Deep learning, RNNs*   June 2021
- Published in Transactions of Signal Processing (TSP) - 350+ citations.
- Contributed in the development and evaluation of a learning based approach to non linear state estimation.
- Comparing the system vs traditional state estimation techniques such as Extended Kalman Filter.
- Semester Project in the Signal and Information Laboratory (ISI) at ETH Zurich.

Awards & Fellowships

La Caixa Felowships 2024: Fully funded scholarship to carry out a PhD program at any institution. The fellowship all research-related expense including tuition fees and stipend. Only awarded to 100/2000 candidates per year.
MSc Honours: Graduated from ETH Zurich with distinction awarded.
Formula Student Germany 3rd place overall: Driverless category with AMZ Driverless.
Daimler AI Award 1st place: Best use of AI algorithms for autonomous driving.
XXIV National Mathematics Olympiad Champion: 1st place in Spanish Mathematics Olympiads group cathegory.
Andorra Mathematics Olympiad Champion: 1st place in Andorran Mathematics Olympiads.

Relevant Course Projects

Machine Learning: Bayesian Neural Networks for medical diagnosis. Bayesian Optimization for neural network design. Actor Critic RL agent for moon lander simulation.
Computer Vision: Transformer-based 3D human pose recognition. Visual odometry pipeline for vehicle localisation. Disentangling controls in GANs via kernel PCA for image synthesis.
Natural Language Processing: Theoretical study on LLM capabilities. Performance analysis of different models on reasoning tasks (GSM8K dataset).
Motion Planning: Planning + Control of a bi-thrust spacecraft in a virtual dynamic environment. Dynamic programming for drone delivery in stochastic state space. MPC for autonomous driving.

Technical Skills

Programming Languages: C++, Python, C, Java (Beginner)
Relevant Tools: PyTorch, Jaax, ROS, Eigen, WandB
Others: Git, Bazel, CMake, Kubernetes, Docker

Language Skills

Spanish, Catalan: Native Speaker   **English**: C2 level   **French**: C1 level   **Italian**: B2 level

Extracurricular experience

Teaching Assistant   Sep. 2023 – Jan. 2024
Automatic Control Lab (ETH) | Teaching Assistant for the course Game Theory And Control   *Zürich, Switzerland*
Primary School Robotics Teacher   Sep. 2018 – July 2019
CreaTic Academy S.L. | Robotic workshops for students aged from 8 to 14   *Barcelona, Spain*

Interests and hobbies

Alpine skiing, Alpinism, Tennis, Surfing, Backpacking