

Adrià López Escoriza

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EDUCATION

ETH Zürich

Sep. 2021 – March 2024

MSc Robotics, Systems & Control (RSC), GPA: 5.6/6

Zürich, Switzerland

- Relevant Courses completed (28 ECTS): Large Language Models, Machine Perception, Game Theory and Control, Deep Learning, Planning and Decision Making, Vision Algorithms for Mobile Robotics.
- Semester project at Ascento Robotics Company (ARC): GPS waypoint following system for landfill inspection.

Universitat Politècnica de Catalunya

Sep. 2017 – July 2021

BSc in Telecommunications Engineering (ETSETB), GPA: 8.26/10 (Top 7%)

Barcelona, Spain

- Bachelor Mobility Program at Electrical Engineering (ITET) Department of ETH Zürich.
- Total Credits ECTS of the program: 240. All credits obtained on first call.
- Main focus on signal processing, communication systems and electronic control.
- Honours in: Physics, Electromagnetism, Signals & Systems, Radiation & Propagation, Audiovisual & Communications Signal Processing & Bachelor's Thesis.

RELEVANT EXPERIENCE

Chain of Thought World Models for RL

Aug. 2023 – March 2024

VIS, CVL, ETH | Master Thesis, Reinforcement Learning, Visual Intelligence

Zürich, Switzerland

- Design and implement a CoT World Model, incorporating short-term prediction and key frame forecasting.
- Develop a goal-conditioned reinforcement learning framework using the CoT World Model.
- Evaluate the performance of the proposed model in comparison to traditional world models in long-horizon planning and control tasks.

Motion Planning Intern

Sep. 2022 – April 2023

Motional | Autonomous driving, High-level Planning

Singapore, Singapore

- Bench-marking of pre-existing planning pipeline to find bottlenecks in scenarios with several dynamic obstacles.
- Design and prototype new behavioral planning pipeline to incorporate complex lane structure information.
- Presentation and deployment of new planning system onto main software stack.

GPS Waypoint following

March 2022 – July 2022

ARC, ETH | State estimation, Control, ROS

Zürich, Switzerland

- Full autonomous pipeline for carrying out waypoint following missions.
- Sensor fusion of odometry and GPS measurements and control algorithm in ROS.

Estimation Module Lead

Sep. 2021 – June 2022

AMZ Driverless | Autonomous Racing, ROS, C++

Zürich, Switzerland

- Lead of the estimation module (4 members), in charge of state estimation and SLAM.
- Coordination between different modules to design a robust global autonomous stack.
- Design of an autonomous racing car from scratch to compete in Formula Student 2022 competitions.

State Estimation Responsible

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 Localisation And Mapping

Sep. 2019 – Sep.2020

BCN eMotorsport | Autonomous Racing, SLAM, ROS, C++

Barcelona, Spain

- Study and comparison of different SLAM algorithms for its implementation in a Formula Student Driverless car.
- Design of online SLAM system from LiDAR observations and raw GPS data.
- Implementation in C++ leading to the first ever mapping algorithm implemented in a Spanish autonomous car.

PUBLICATIONS

- KNet for Velocity Estimation** | *Autonomous driving, Velocity Estimation* Feb. 2021 – 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* Oct. 2020 – Feb. 2021
- Published in Transactions of Signal Processing (TSP) - 100+ 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.

RELEVANT COURSE PROJECTS

Artificial Intelligence: 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.

AWARDS

Formula Student Germany 3rd place overall: Driverless category with AMZ Driverless.

Daimler AI Award 1st place: Best use of AI algorithms for autonomous driving.

Bachelor Thesis Honours: Maximum grade awarded by the committee at Universitat Politècnica de Catalunya.

XXIV National Mathematics Olympiad Champion: 1st place in Spanish Mathematics Olympiads group category.

Andorra Mathematics Olympiad Champion: 1st place in Andorran Mathematics Olympiads.

TECHNICAL SKILLS

Programming Languages: C++(7/10), Python (7/10), C (5/10), Java (5/10)

Relevant Frameworks: PyTorch, Eigen, ROS

Other Tools: Git, Bazel, CMake

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

Construction volunteer June 2018 – Aug. 2018
Vertical Ascent | Construction of an orphanage in the outskirts of Pokhara Sarangkot, Nepal

OTHER COURSES

Imperial College of London June 2017 – July 2017
Physics pre-college course London, UK

University of California Los Angeles (UCLA) June 2016 – July 2016
Debate and Public speaking Los Angeles, CA

INTERESTS AND HOBBIES

Alpine skiing, Alpinism, Tennis, Surfing