

# Alberic de Lajarte

## Control and Deep Learning Engineer

### EDUCATION

<b>EPFL, M.S. in Robotics</b>	<b>Lausanne, Switzerland</b>	<b>Sept. 2018 – July 2021</b>
<i>Completed thesis with highest honor.</i>		
<i>Robotics courses:</i> mobile robotics, robotics practical, deep learning, computer vision, embedded systems		
<i>Control courses:</i> model predictive control, sensor fusion, actuator control, system identification		
<b>EPFL, B.S. in Microengineering</b>	<b>Lausanne, Switzerland</b>	<b>Sept. 2015 – July 2018</b>
<i>Control courses:</i> automation practical, dynamical systems, signal processing, numerical analysis		
<i>Programming courses:</i> C programming, C++ programming, microinformatics, microcontrollers		

### PROFESSIONAL EXPERIENCE

<b>Deep Learning Researcher</b>	<b>Harvard University</b>	<b>Dec. 2022 - Today</b>
<ul style="list-style-type: none"><li>Started a deep learning team from the ground-up, leading 4 researchers to develop the full software stack, including dataset generation and storage, training infrastructure and automated evaluation.</li><li>Improved RNA structure prediction by 22% on challenging RNA families by utilizing transfer learning with synthetic data and a new model architecture.</li><li><u>Tools:</u> Deep-learning, PyTorch, Lightning, Weights &amp; Biases, HuggingFace</li></ul>		
<b>Robotics Engineer</b>	<b>EPFL, LASA</b>	<b>Nov. 2021 - Nov. 2022</b>
<ul style="list-style-type: none"><li>Reduced planning failures and collision rates by 60% with a novel motion planner for high DOF robotic arms, using Model Predictive Control and the Pinocchio library.</li><li>Developed the complete control and planning stack for a reactive pick and throw application, deployed at the Robotics Days and challenged by 100+ visitors during two days.</li><li><u>Tools:</u> MPC, Impedance Control, Robot Kinematic and Dynamic, Python, C++, ROS</li></ul>		

### PUBLICATIONS & PROJECTS

**Harvard, Rouskin Lab:** Diverse Database and Machine Learning Model to Narrow the Generalization Gap in RNA Structure Prediction, 2024, bioRxiv: <https://www.biorxiv.org/content/10.1101/2024.01.24.577093v>

**EPFL, Control Laboratory:** Optimal Thrust Vector Control of an Electric Small-Scale Rocket Prototype, 2022, ICRA: <https://ieeexplore.ieee.org/abstract/document/9811938>

#### Kind humanoid April 2024 - July. 2024

- Implemented an automated pipeline from CAD to reinforcement learning simulation, reducing cycle time between design and training from 3h to 15 minutes.
- Performed system identification of the torque actuators, improving simulation accuracy by 60%.
- Tools: Humanoid robots, Isaac Lab, Reinforcement Learning, System Identification

#### EPFL Rocket Team March 2018 - July 2021

- Led a team of 200 students to design, build and test a sounding rocket with hybrid propulsion. Launched 10+ rockets, participated in 3 competitions, scored 1st place at the 2021 European competition.
- Deployed first control and planning algorithm to reach a precise apogee with <5% position error, using Model Predictive Control and Kalman Filtering.
- Prevented 20+ software and hardware errors without requiring any test flight by developing a real time rocket simulator using ROS with hardware-in-the-loop capabilities.
- Tools: Optimal Control (MPC), Sensor Fusion, Numerical Integration, ROS, C++ and Python

### SKILLS

**Systems and Control:** Compliant and Optimal Control, Sensor Fusion, System Modeling, Numerical optimization

**Deep Learning:** Supervised Learning, Reinforcement Learning, Imitation Learning, Machine Learning

**Programming:** Python, C/C++, Embedded Systems, ROS, Matlab, Command Line, Linux, Git, Docker

San Francisco, CA | (650)-382-8314 | [albericlajarte@gmail.com](mailto:albericlajarte@gmail.com) | [albericdelajarte.github.io/](https://albericdelajarte.github.io/) |  
[linkedin.com/in/alberic-de-lajarte](https://linkedin.com/in/alberic-de-lajarte) | [github.com/AlbericDeLajarte](https://github.com/AlbericDeLajarte) |