

# EDOUARD LEURENT | RESUME

- » **Research:** Safe and Efficient Reinforcement Learning for Autonomous Systems
- » **PhD Supervisors:** Odalric-Ambrym Maillard, Denis Efimov
- » **Interests:** Control and Decision-Making, Statistical Learning, Robotics



## »» Education

- 2017 – 2020 **PhD in Computer Science** Inria
  - » At Inria SequeL and Inria Valse, specialized in Sequential Learning and Control Theory
  - » Theoretical and empirical research on Safe Reinforcement Learning, code in Python
- 2011 – 2014 **Master's Degree in Science and Executive Engineering** Mines ParisTech
  - » Highly-ranked French engineering school
  - » Specializations: Applied Maths, Robotics, Control Theory, Computer Vision

## »» Experience

- 2017 – 2020 **PhD Student** Renault Group
  - » Industrial (CIFRE) thesis within the path planning team, Autonomous Driving department
- 2017 **Technical Leader: Guidance, Navigation and Control** Parrot Drones
  - » Managed four engineers and four interns, filed three patents
  - » Set up continuous integration with nightly tests and performance monitoring
- 2014 – 2016 **Control Systems Engineer** Parrot Drones
  - » Developed flight control and estimation algorithms in C++, running on consumer drones
- 2013 **Software Engineering Intern** Twitter
  - » Worked in the Mobile team on the performances and stability of the iOS app
  - » Integrated a complete redesign of the app for the release of iOS 7

## »» Achievements

- 2019–2020 **Seminars**
  - » Invited Speaker: Amazon Vancouver (2019); the CoFed-DLAD workshop at ITSC (2020)
  - » Organizing Committee & Teaching Assistant at RLSS 2019
  - » Science popularization events: Inria 13:45, and the Inria-Industry Meetings
- 2020–2021 **Honours and Awards**
  - » Awarded the *Best Doctoral Thesis Prize* by the Abertis Chair, 2021
  - » Awarded the *Best PhD Award* by the CNRS (GdR MACS) and the Club EEA, 2021
  - » Received the second prize at the "AI and the 3rd industrial revolution" challenge, 2020
- 2018–2020 **Review Services**
  - » Conferences: NeurIPS, ICLR, ECML, IV. » Journals: EAAI and IJC.

## Publications

### 2019–2020 Conferences

- ▶ **Edouard Leurent**, Denis Efimov, and Odalric-Ambrym Maillard. "Robust-Adaptive Control of Linear Systems: beyond Quadratic Costs". In: *Advances in Neural Information Processing Systems 33 (NeurIPS)*. Virtual, Dec. 2020. **Oral (1.1% acceptance rate)**.
- ▶ **Edouard Leurent**, Denis Efimov, and Odalric-Ambrym Maillard. "Robust-Adaptive Interval Predictive Control for Linear Uncertain Systems". In: *2020 IEEE 59th Conference on Decision and Control (CDC)*. Virtual, Dec. 2020
- ▶ **Edouard Leurent** and Odalric-Ambrym Maillard. "Monte-Carlo Graph Search: the Value of Merging Similar States". In: *Asian Conference on Machine Learning (ACML)*. Virtual, Nov. 2020, pp. 577–592
- ▶ Nicolas Carrara\*, **Edouard Leurent**\*, Romain Laroche, Tanguy Urvoy, Odalric-Ambrym Maillard, and Olivier Pietquin. "Budgeted Reinforcement Learning in Continuous State Space". In: *Advances in Neural Information Processing Systems 32 (NeurIPS)*. Vancouver, Canada, Dec. 2019. \*equal contribution.
- ▶ **Edouard Leurent**, Denis Efimov, Tarek Raissi, and Wilfrid Perruquetti. "Interval Prediction for Continuous-Time Systems with Parametric Uncertainties". In: *2019 IEEE 58th Conference on Decision and Control (CDC)*. Nice, France, Dec. 2019, pp. 7049–7054
- ▶ **Edouard Leurent** and Odalric-Ambrym Maillard. "Practical Open-Loop Optimistic Planning". In: *19th European Conference on Machine Learning and Principles and Practice (ECML-PKDD)*. Würzburg, Germany, Sept. 2019

### 2018 – 2019 Workshops

- ▶ **Edouard Leurent** and Jean Mercat. "Social Attention for Autonomous Decision-Making in Dense Traffic". In: *Machine Learning for Autonomous Driving Workshop at NeurIPS*. Vancouver, Canada, Dec. 2019
- ▶ **Edouard Leurent**, Yann Blanco, Denis Efimov, and Odalric-Ambrym Maillard. "Approximate Robust Control of Uncertain Dynamical Systems". In: *Machine Learning for Intelligent Transportation Systems Workshop at NeurIPS*. Montreal, Canada, Dec. 2018

### 2020 Collaborations

- ▶ Pierre Ménard, Omar Darwiche Domingues, Anders Jonsson, Emilie Kaufmann, **Edouard Leurent**, and Michal Valko. "Fast active learning for pure exploration in reinforcement learning". In: *accepted to ICML*. May 2021
- ▶ Emilie Kaufmann, Pierre Ménard, Omar Darwiche Domingues, Anders Jonsson, **Edouard Leurent**, and Michal Valko. "Adaptive Reward-Free Exploration". In: *The 32nd International Conference on Algorithmic Learning Theory (ALT 2021)*. Paris, France, Mar. 2021
- ▶ Anders Jonsson, Emilie Kaufmann, Pierre Ménard, Omar Darwiche Domingues, **Edouard Leurent**, and Michal Valko. "Planning in Markov Decision Processes with Gap-Dependent Sample Complexity". In: *Advances in Neural Information Processing Systems 33 (NeurIPS)*. Virtual, Dec. 2020

### 2018 – 2019 Patents

- ▶ **Edouard Leurent**. "Autonomous system for taking moving images from a drone, with target tracking and improved target location". U.S. pat. US10322819B2. Parrot Drones. June 18, 2019
- ▶ Laure Chevalley\* and **Edouard Leurent**\*. "Self-containing drone-driven viewing system with target tracking and target shifting angle holding". French pat. FR3056921B1. Parrot Drones. Nov. 23, 2018
- ▶ Martin Liné\* and **Edouard Leurent**\*. "Method for piloting a rotary wing drone, related computer program, electronic apparatus and drone". U.S. pat. US20180307225A1. Parrot Drones. Oct. 25, 2018

### 2018 Software

- ▶ **Edouard Leurent**. *An Environment for Autonomous Driving Decision-Making*. <https://github.com/eleurent/highway-env>. 2018