

EDOUARD LEURENT | RESUME

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



»»» Experience

- 2021 – present **Research Scientist** [DeepMind](#)
 - » RLHF for Gemini
 - » Reinforcement Learning for real-world systems
- 2017 – 2020 **PhD Student** [Renault Group](#)
 - » Industrial (CIFRE) thesis within the path planning team, Autonomous Driving department
- 2014 – 2017 **Control Systems Engineer and Technical Leader** [Parrot Drones](#)
 - » Developed flight control and estimation algorithms in C++, running on consumer drones
 - » Led four engineers and four interns, filed three patents
- 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

»»» Education

- 2017 – 2020 **PhD in Computer Science** [Inria](#)
 - » At Inria SequeL and Inria Valse, specialized in Sequential Learning and Control Theory
 - » Research on Safe and Efficient Reinforcement Learning for Autonomous Driving
- 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

»»» Achievements

- 2019–2020 **Seminars**
 - » Invited Speaker: Amazon (2019), ITSC (2020), Toyota Research Institute (2022)
 - » 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

2022–2023

Tech reports

- » Gemini Team et al. *Gemini: A Family of Highly Capable Multimodal Models*. 2023. arXiv: 2312.11805 [cs.CL]
- » Tom Zahavy, Vivek Veeriah, Shaobo Hou, Kevin Waugh, Matthew Lai, **Edouard Leurent**, Nenad Tomasev, Lisa Schut, Demis Hassabis, and Satinder Singh. *Diversifying AI: Towards Creative Chess with AlphaZero*. 2023. arXiv: 2308.09175 [cs.AI]
- » Pengming Wang et al. *Optimizing Memory Mapping Using Deep Reinforcement Learning*. 2023. arXiv: 2305.07440 [cs.PF]

2019–2023

Conferences

- » Daniel J. Mankowitz*, Andrea Michi*, Anton Zhernov*, Marco Gelmi*, Marco Selvi*, Cosmin Paduraru*, **Edouard Leurent***, and al. "Faster sorting algorithms discovered using deep reinforcement learning". In: *Nature* 618.7964 (June 2023), pp. 257–263. ISSN: 1476-4687. DOI: 10.1038/s41586-023-06004-9. URL: <https://doi.org/10.1038/s41586-023-06004-9>
- » Pierre Schegg, Jérémie Dequidt, Eulalie Coevoet, **Edouard Leurent**, Rémi Sabatier, Philippe Preux, and Christian Duriez. "Automated Planning for Robotic Guidewire Navigation in the Coronary Arteries". In: *2022 IEEE 5th International Conference on Soft Robotics (RoboSoft)*. 2022, pp. 239–246. DOI: 10.1109/RoboSoft54090.2022.9762096
- » **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
- » Pierre Ménard, Omar Darwiche Domingues, Anders Jonsson, Emilie Kaufmann, **Edouard Leurent**, and Michal Valko. "Fast active learning for pure exploration in reinforcement learning". In: *International Conference on Machine Learning*. PMLR. 2021, pp. 7599–7608
- » 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
- » **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
- » 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
- » 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

»» Publications

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