

Education

- 2016-now **PhD. Student on Computer Science**, MIT - CSAIL, Cambridge (US).
Machine Learning and Robotics. Advisors: Leslie P. Kaelbling and Tomás Lozano-Pérez.
Currently mentoring 2 master students and 3 undergrad students.
- 2015-2016 **Visiting student**, MIT - Mechanical Engineering, Cambridge (US).
Planning and Machine Learning for robot manipulation. Advisor: Alberto Rodriguez.
- 2011-2016 **2 Degrees: Mathematics and Engineering Physics**, UPC - CFIS, Barcelona.
Valedictorian of 2-degree program promotion, first of starting promotion in Math degree.

Research

Current neural networks are data-hungry and can only generalize within the task they have been trained for. To solve both problems I am interested in *combinatorial generalization* : learning reusable neural modules and composing them in different ways to generalize to novel tasks with very little data. I am applying these ideas to broaden the current capabilities of meta-learning algorithms, graph neural networks and program synthesis algorithms.

Conference Publications

- **Alet** et al., "Neural Relational Inference with fast Modular Meta-learning", *NeurIPS 2019*
- **Alet** et al., "Graph Element Networks : adaptive, structured computation and memory", *ICML 2019 long talk* (4.5% of all submissions)
- Bauza, **Alet** et al., "Omnipush : accurate, diverse, real-world dataset of pushing dynamics with RGB-D video", *IROS 2019*
- **Alet** et al., "Modular meta-learning", *CoRL 2018*
- **Alet** et al., "Finding important entities in streaming data", *IJCAI 2018*
- Zeng et al., "Robotic pick-and-Place of novel objects in clutter with multi-affordance grasping and cross-domain image matching", *ICRA 2018*

Preprints and Workshop Publications

- **Alet***, Schneider* et al., "Meta-learning curiosity algorithms", *NeurIPS 2019 meta-learning and RL workshops, submitted to ICLR 2019*
- **Alet** et al., "Graph Element Networks : a flexible model for robotic applications", *IROS late-breaking results 2019*
- **Alet** et al., "Modular meta-learning in abstract graph networks for combinatorial generalization", *NeurIPS meta-learning workshop 2018*
- Bauza*, **Alet*** et al., "Omni-push : accurate, diverse, real-world dataset of pushing dynamics with RGBD images", *NeurIPS physics workshop 2018*

Invited talks

- MIT Machine Learning Tea : Meta-learning and combinatorial generalization (November 2019)
- Pieter Abbeel's lab (UC Berkeley) : Meta-learning structure (October 2019)
- KR2ML@IBM : Graph Element Networks (September 2019)

Work Experience

- Summer **Software Engineer Intern**, *Google Research*, Zurich.
2017 Designed & built 1st Unsupervised Learning prototype to create Youtube ads from raw videos.
- Summer **Software Engineer Intern**, *Google Research*, Zurich.
2015 Machine Learning research to improve Google's handwriting recognizer using LSTMs.

Most Important Scholarships and Programs

- 2016-2018 **Merit Graduate Scholarship**, 'La Caixa' foundation.
Most prestigious graduate scholarship in Spain. Full funding for two years.
- 2011-2016 **Merit Undergrad Program & Scholarship**, CFIS.
Only 40 students around Spain enter this merit program that allows you to do two degrees. Within them, I was one of the few to have full funding for both degrees.

Computer Science experience

Most important CS awards

- 2016,2017 Amazon Robotics Challenge (ARC) *Designed and built high level planner of team MIT 1st ('17) and 3rd ('16) in stowing*
- 2011-2015 SWERC-ACM (programming contest) *Silver(6th), Gold(2nd), Gold(3rd), Gold(1st), Gold(1st)*
Most decorated participant in the history of the regional (which includes Spain, France, Italy, Portugal, Switzerland and Israel)
- 2015,2016 ACM ICPC - World Finals *26th, 51th out of 128, previously qualified from ~13.000 teams*
- 2011 IOI - International Olympiad in Informatics *Bronze Medal*

Relevant CS knowledge

- Python: Good level *My main language for the last 4 years*
- PyTorch: Good level *Used in current research*
- Tensorflow: Medium level *Used in research 2 years ago ; could quickly pick up again*
- C++: Good level *Used for 7 years*

Most Important non-CS Awards

- 2019 Selected speaker for *Science in the News* at Harvard university
- 2011 1st UPF Engineering and Applied Mathematics Prize and
1st UPC Poincaré Prize *research thesis: "Generating Functions and Searching Automata"*
- 2010,2011 Spanish Math Olympiad *Silver Medal(x2)*
- 2011 Catalan Physics Olympiad *Gold Medal(1st place)*
- 2011 Selectivitat Prize *6th out of > 25.000 students in the examination for entering college*