

## PERSONAL INFORMATION



## David Martínez Martínez

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Date of birth 16/02/1988 | Nationality Spanish

## EXPERIENCE & EDUCATION

Sep 2016 – Present  
Amazon Video UK

### Software Development Engineer

- Design and development of a framework to interact with labs of devices (including AWS virtual instances, physical TVs, ...) to automate tests for the Amazon Video app. The architecture allowed users to **interact in real time with devices in different locations**, and run tests on any type of device.
- Created a tool to check if the **data used for testing was representative** of real usage. This tool **learned models** to predict the server latency based on real input transactions, and was then used to analyse test executions.

Sep 2012 – Feb 2017  
IRI (BarcelonaTech, CSIC)

### PhD in Artificial Intelligence and Robotics

- Keywords: Model-based Reinforcement Learning (RL), Task planning, Robotics..
- Advisors: Guillem Alenyà and Carme Torras
- **Highest grade: Cum Laude**
- **12 publications, including 4 top journals**
- My research accomplishments include:
  - Combine Reinforcement and Active Learning to learn tasks faster with very few user interactions.
  - Learn relational probabilistic models to be used by planners, and integrate them in RL.
  - Use task planners to solve robotic tasks faster.

2011 – 2012  
UPC-BarcelonaTech

### MSc in Automatic Control and Robotics

- Specialized in: Artificial Intelligence, Robotics and Computer Vision.
- **Top 5%** of my promotion.

2006 – 2010  
University of León

### BSc in Computer Science

- Specialized in: Computer Science, Programming, GNU/Linux, Artificial Intelligence, Robotics.
- **Highest grades** of my promotion.

## PROJECTS & INTERNSHIPS

February – August 2015  
Tokyo, Japan

### Internship at National Institute of Informatics

- Won a scholarship from the NII to carry out a 6-month research stay.
- I extended previous work on rule learning to tackle relational probabilistic models that could be used by planners. The method used heuristic search optimization to select the best sets of rules. It **learned more expressive planning models than other state of the art** approaches.

December 2012 – April 2014

**IntellAct EU Project FP7**

- Research, design and implementation of a model-based learner and decision maker.
- Flexible implementation that was easily integrated with different robots and simulators.
- Novel approach that combined relational reinforcement learning and active learning. It **reduced greatly** the number of **actions required to learn** (by 75% compared to RL approaches) with the inclusion of a few user requests (< 5% of the actions).

February 2012 – June 2013

**Member of REEM@IRI team (RoboCup@HOME 2013)**

- Create skills for the RoboCup@HOME (competition of domestic service robots).
- Designed and developed the skill to be used in the open challenge: grasp and hang shirts. Applied machine learning to detect collars, and standard techniques to grasp and hang them. It was the **highest scoring test of the team**, which allowed us to reach the last stage of the competition.

March – July 2011  
Colcentric**System administrator and software developer**

- Startup company.
- I was in charge of the GNU/Linux servers, and I was also a back-end developer.

## PERSONAL SKILLS

## Languages

Spanish	Native
English	Full proficiency
Japanese	Intermediate proficiency

## Computer skills

Programming (specially C++ and NodeJS, but also Python, Matlab and others).  
GNU/Linux.  
Machine learning (specially reinforcement learning and model learning).  
AI task planning.  
Robotics using ROS (WAM, REEM and NAO robots) and the Gazebo simulator.  
Basic computer vision and 3D perception (OpenCV and Point Cloud Library).

## SELECTED PUBLICATIONS

## Journals

D. Martínez, G. Alenyà, T. Ribeiro and K. Inoue, C. Torras. "Relational Reinforcement Learning for Planning with Exogenous Effects", *Journal of Machine Learning Research*, 2017.

D. Martínez, G. Alenyà and C. Torras. "Relational Reinforcement Learning with Guided Demonstrations", *Artificial Intelligence*, 247: 295-312, 2017.

T. R. Savarimuthu et al. "Teaching a Robot the Semantics of Assembly Tasks", *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, 2017.

D. Martínez, G. Alenyà and C. Torras. "Planning robot manipulation to clean planar surfaces". *Engineering Applications of Artificial Intelligence*, 39: 23-32, 2015.

## Conferences

D. Martínez, G. Alenyà, C. Torras, T. Ribeiro and K. Inoue. "Learning Relational Dynamics of Stochastic Domains for Planning", *Int. Conf. on Automated Planning and Scheduling (ICAPS)*, 2016.

D. Martínez, G. Alenyà, and C. Torras. "Safe robot execution in model-based reinforcement learning", *IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS)*, 2015, pp. 6422-6427.

D. Martínez, G. Alenyà and C. Torras. "V-MIN: Efficient reinforcement learning through demonstrations and relaxed reward demands", *AAAI Conf. on Artificial Intelligence*, 2015, pp. 2857-2863.

D. Martínez, et al. "Active learning of manipulation sequences", *IEEE Int. Conf. on Robotics and Automation (ICRA)*, 2014, pp. 5671-5678.

## Complete list

<https://scholar.google.es/citations?user=o9E2TuQAAAAJ>