Rafael A. Rodriguez-Sanchez

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Education

Brown University — Providence, RI
Ph.D. in Computer Science, Advisor: George Konidaris — 2019–Current

- Currently working in learning abstractions for efficient reinforcement learning and decision-making.

Politecnico di Milano — Milan, Italy
M.S. in Computer Science, Graduation Grade: 110/110 *Cum Laude* — 2016–2018

- Thesis: "A Variational Approach to Transfer Value Functions in Reinforcement Learning".
  Advisor: Marcello Restelli

Universidad Simon Bolivar — Caracas, Venezuela
B.S. in Electronic Engineering, GPA: 4.9/5.0 (*Summa Cum Laude*) — 2010–2016

- Thesis: "Implementation of algorithms and debugging for STMicroelectronics wearable platform (Desarrollo de algoritmos y depuracion de la plataforma ponible de STMicroelectronics)".
  Advisors: Daniele Caltabiano (ST Microelectronics), Giacomo Boracchi (Politecnico di Milano), Novel Certad (Universidad Simon Bolivar).

Experience

Amazon (Alexa) — Cambridge, MA
Applied Scientist Intern — Summer 2021

- Research on Task-oriented Dialog systems. Investigated the use of Large Language Models (LLMs) for semantic parsing.

Politecnico di Milano — Milan, Italy
Research Fellow, AIRLab — Fall 2018 - Summer 2019

- Vision-based Tracking algorithms for Intelligent Missiles
- Development of tracking algorithms for intelligent missiles simulation that target naval ships in order to enable research in optimal defense strategies computation

Politecnico di Milano — Milan, Italy
Research Assistant, AIRLab — Fall 2016

- Restructuring of the electronics of Differential Robot Platform for Autonomous Navigation Research
- Implementation of low-level controllers for motors and acquisitions of sensory information from LIDARs, sonars and stereocameras based on ROS

ST Microelectronics — Agrate-Brianza, Italy
Research & Development Intern, Advanced Systems Technologies Group — Feb 2015-Jul 2015

- Development of real-time algorithm to detect optimal time of image acquisition to improve image sharpness
- Improve transmission rate of the image acquisition system
- Debugged and fixed of power and image transmission of microcontroller-based board

Conferences

[1] A. Tirinzoni*, **R. Rodriguez-Sanchez***, and M. Restelli, "Transfer of value functions via variational methods", in *Advances in Neural Information Processing Systems 31*, 2018 [acceptance rate: 21%].

[3] **R. Rodriguez-Sanchez***, B. A. Spiegel*, J. Wang, R. Patel, S. Tellex, and G. Konidaris, "RLang: A declarative language for describing partial world knowledge to reinforcement learning agents", in *Proceedings of the 40th International Conference on Machine Learning*, Honolulu, Hawaii, USA, 2023.

Workshops

[4] **Rodriguez-Sanchez, Rafael**, B. A. Spiegel, J. Wang, R. Patel, S. Tellex, and G. Konidaris, "Rlang: A declarative language for expression prior knowledge for reinforcement learning", *Multidisciplinary Conference on Reinforcement Learning and Decision Making (RLDM) 2022*, 2022.

[5] **R. Rodriguez-Sanchez***, R. Patel*, and G. Konidaris, "On the relationship between structure in natural language and models of sequential decision processes", *1st Language and Reinforcement Learning Workshop at International Conference in Machine Learning*, 2020.

[6] A. Tirinzoni*, **R. Rodriguez-Sanchez***, and M. Restelli, "Transfer of value functions via variational methods", 2018 [Oral].

Preprints

[2] **R. Rodriguez-Sanchez*** and G. Konidaris, *Learning abstract world models for value-preserving planning with options*, Under submission, 2023.

Teaching

- **Teaching Assistant** at Universidad Simon Bolivar — Fall 2012-Winter 2013
  ***Programming I (CI 2125)**:*
  — *Taught weekly Laboratory Sessions. Graded 20% of the grade.*

Skills

- **Programming Languages:** Embedded C/C++, Python, MATLAB, Java
- **Frameworks:** ROS, TensorFlow, PyTorch, OpenCV

Languages

- **Spanish**
- **English**
- **Italian**

Relevant Coursework

Machine Learning, Deep Learning, Seminar on Recent Advances Vision and Language, Algorithmic Game Theory, Probabilistic Algorithm Analysis, Optimization

Scholarships and Awards

- MAECI (Italian Ministry of Foreign Affairs and International Cooperation) Scholarship covering Master's degree tuition and living expenses in Italy. — 2017–2018
- Universidad Simon Bolivar "Exceptionally Good" Mention for Undergraduate Thesis — 2015
- Universidad Simon Bolivar Top 30 Students across all majors — 2016
- Universidad Simon Bolivar Best Electronic Engineering Student (Cohort 2010) — 2012, 2014
- Universidad Simon Bolivar Top 10 Students of 2010 Cohort — 2011