

Antonio Andriella

PH.D CANDIDATE · AI ENGINEER

Institut de Robotica i Informatica Industrial, Parc Tecnològic de Barcelona. C/ Llorens i Artigas 4-6, Barcelona, 08028, Spain

☎ +34 665 88 69 03 | ✉ aandriella@iri.upc.edu | 🏠 antonioandriella.com | 📱 aandriella | 🌐 antonio-andriella

Research Interests

Robotics, human-centered design, machine learning, artificial intelligence, human-robot interaction, adaptive and personalized systems, reinforcement learning, automated planning, socially assistive robotics.

Education

Polytechnic University of Catalonia

PH.D (AUTOMATIC CONTROL, ROBOTICS & VISION)

- Thesis title: Adaptive and Personalized Robot-Assisted Training
- Thesis supervisors: Dr. Guillem Alenyà, Prof. Carme Torras

Barcelona, Spain

expected end of 2020

University of Rome, La Sapienza

MASTER IN ARTIFICIAL INTELLIGENCE (WITH HONOURS)

- Thesis title: Multi-Objective Planning in Situation Calculus
- Thesis score: 110 cum laude/110
- Thesis supervisors: Prof. Daniele Nardi and Dr. Vittorio Ziparo

Rome, Italy

2007 – 2009

University of Rome, La Sapienza

BACHELOR IN COMPUTER ENGINEERING

- Thesis title: Analysis and Evaluation of SIFT Algorithm
- Thesis score: 99/110
- Thesis supervisor: Prof. Fiora Pirri

Rome, Italy

2004 – 2007

Publications

- [7] **A. Andriella**, R. Huertas-García, S. Forgas-Coll, C. Torras and G. Alenyà. *Discovering SOCIABLE: Using a Conceptual Model to Evaluate the Legibility and Effectiveness of Backchannel Cues in an Entertainment Scenario*. 29th IEEE International Symposium on Robot and Human Interactive Communication, 2020.
- [6] **A. Andriella**, C. Torras and G. Alenyà. *Cognitive System Framework for Brain-Training Exercise based on Human-Robot Interaction*. *Cognitive Computation* 12, 793–810, 2020.
- [5] **A. Andriella**, C. Torras and G. Alenyà. *Short-Term Human–Robot Interaction Adaptability in Real-World Environments*. *International Journal of Social Robotics* 12, 639–657, 2019.
- [4] **A. Andriella**, A. Suárez, J. Segovia, C. Torras and G. Alenyà. *Natural teaching of robot-assisted rearranging exercises for cognitive training*, 11th International Conference on Social Robotics, 2019, Madrid, in *Social Robotics*, Vol 11876 of *Lecture Notes in Artificial Intelligence*, pp. 611–621, Springer.
- [3] **A. Andriella**, C. Torras and G. Alenyà. *Learning robot policies using a high-level abstraction persona-behaviour simulator*, 28th IEEE International Symposium on Robot and Human Interactive Communication, 2019.
- [2] **A. Andriella**, J. Lobo, C. Torras and G. Alenyà. *Robot interaction adaptation for healthcare assistance*, 2019 Workshop on Artificial Intelligence & Robotics in Service Interactions, 2019, Zaragoza, pp. 159–172.
- [1] **A. Andriella**, G. Alenyà, J. Hernández-Farigola and C. Torras. *Deciding the different robot roles for patient cognitive training*. *International Journal of Human-Computer Studies*, 117, 20–29, 2018.

Honors & Awards

RESEARCH

2017–2020 **Marie Curie Fellowship**, Institut de Robotica i Informatica Industrial, CSIC - UPC

Barcelona, Spain

2019 **“Show my research” contest**, Marie Curie Alumni Association and Vikki Accademy

2019 **Second Prize to the best diffusion work**, The Catalan Association for Artificial Intelligence

Catalunya, Spain

Work Experience

Artificial Intelligence Lead

Rome, Italy

COGISEN

2012 – 2016

Worked on developing a set of machine learning algorithms aiming to go beyond the current limitations. The algorithms had been used for gaze tracking technology with RGB cameras as well as for image and video compression. The platform I worked on, allowed for the quick creation of models to capture and follow specific sparse changes of information in the frequency domain.

Outcome:

- Designed, developed and deployed new machine learning algorithms.
- Applied and validated the developed algorithms to real-world scenarios.
- Gained knowledge in frequency domain algorithms.
- Worked in a dynamic and fast-paced team with top experts.

Artificial Intelligence Expert

Rome, Italy

COGISEN

2010 – 2012

Worked on the first gaze tracking solution for an F1 simulator at Ferrari. Furthermore, developed a silhouette detection pipeline for a kart simulator for a Ferrari Driver Academy pilot.

Outcome:

- Gained and strengthened knowledge in using OpenCV library as well as Matlab Simulink.
- Developed face and eye detection algorithms based on Viola Jones method as well as eye shapes based on Active Shape Model.
- Prototyped a 3D gaze tracking solution using stereo vision to estimate the position of eyes on the screen.
- Worked in close collaboration with the programming and electronics leads.

Artificial Intelligence Consultant

Rome, Italy

COGISEN

2009 – 2010

Analysed and evaluated the opportunity to introduce artificial intelligence into the automotive market.

Outcome:

- Offered strategic support on the next generation of smart sensors.
- Produced reports, with strong analysis on machine learning and data mining state of the art algorithms.

Research Experience

Developing an Adaptive and Personalized Social Robot for Older Adults with Cognitive Impairments

Barcelona, Spain

INSTITUT DE ROBOTICA I INFORMATICA INDUSTRIAL, CSIC-UPC

2017 – Present

Developing a reinforcement learning framework to endow robots with adaptive capabilities needed to tailored their levels of assistance to the individual user's need during cognitive exercises. This includes learning about the user's progression as well as his level of engagement over time. Investigating also techniques such as Automatic Planning for high-level decision making. Designing and conducting experiments to validate and evaluate the effectiveness of the system.

Master Project: Multi-Objective Planning in Situation Calculus in a Rescue Scenario

Rome, Italy

UNIVERSITY OF ROME, LA SAPIENZA

2010 – 2012

Studied the generation of rational behaviors through the planning of actions for teams of robots that follow different objectives. The thesis work consisted of three different activities: i) formalize the domain in Situation Calculus, ii) formulate an approach to find a solution that takes into account both the cooperative aspect of the team as well as the conflict situations, iii) validate the proposed approach on a rescue scenario.

Bachelor Project: Evaluating Scale-Invariant Feature Transform (SIFT) Classifier

Rome, Italy

UNIVERSITY OF ROME, LA SAPIENZA

2006

Analysis and evaluation of the object recognition algorithm, SIFT.

Research Visits

nov-dec 2018 **University of Hamburg**, Department of Informatics, Knowledge Technology (WTM)

Germany

jun 2019 **University of Hamburg**, Department of Informatics, Knowledge Technology (WTM)

Germany

Skills

Robotics/hardware platforms ROS, Nao, TIAGo, WAM
Software/IDEs Git, PyCharm, Visual Studio, CLion
Programming Python, Matlab, Java, C++, HTML, git, LaTeX, PDDL, Prolog

Academic Organization

Workshop: International Conference on Robot and Human Interactive Communication

Naples, Italy

MAIN ORGANISER

2020

Quality of Interaction in Socially Assistive Robotics:

<https://sites.google.com/view/qisar-roman20>

Workshop: International Conference on Social Robotics

Madrid, Spain

CO-ORGANISER

2019

Quality of Interaction in Socially Assistive Robotics:

<https://sites.google.com/view/qisar-icsr19>

Special Issue: Benjamins, Interaction Studies

GUEST EDITOR

2020

Interaction Quality in Human-Robot Interaction

Special Issue: Paladyn, Journal of Behavioral Robotics

GUEST EDITOR

2019

Quality of Interaction in Socially Assistive Robotics

Conference and Journal Service

2020 International Journal of Social Robotics
2020 IEEE Robotics and Automation Letters, RA-L
2020 Paladyn, Journal of Behavioural Robotics
2020 International Conference on Social Robotics
2019 International Conference on Social Robotics
2017 International Conference on Robotics and Automation
2019 IEEE Transactions on Cognitive and Developmental Systems
2019 International Conference on Automated Planning and Scheduling

Conferences and Summer School Attended

2020 International Conference on Robot & Human Interactive Communication
2019 International Conference on Social Robotics
2019 International Conference on Robot & Human Interactive Communication
2018 International Summer School on Planning and Scheduling
2017 International Summer School on Cognitive Robotics

Languages

Italian native language
English fluent: written and spoken
Spanish fluent: written and spoken

References

Dr. Guillem Alenyà
IRI, (CSIC-UPC)
@ galenya@iri.upc.edu
☎ +34 93 4011901

Prof. Carme Torras
IRI, (CSIC-UPC)
@ torras@iri.upc.edu
☎ +34 93 4015790