Curriculum vitae

PERSONAL INFORMATION

Riccardo Caccavale, PhD

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ORCID 0000-0001-8636-7628

Date of birth 29 September 1987 | Nationality Italian

WORK EXPERIENCE

20/07/2022 – Present — Fixed-term Researcher (RTD-A)

University of Naples "Federico II"
Department of Electrical Engineering and Information Technology (DIETI)
Via Claudio 21, 80125, Naples, Italy

Field Computer Science (INFO-01/A)

01/03/2022 – 19/07/2022 — Post-doctoral Researcher

CREATE (Research Consortium for Energy, Automation and Electromagnetic Technologies)
Via Claudio 21, 80125, Naples, Italy

Topic Robotics, Artificial Intelligence, Cognitive Science

01/08/2019 – 31/07/2021 — Research Fellow (Art. 22, Law 240/2010)

University of Naples "Federico II"
Via Claudio 21, 80125, Naples, Italy

Topic Robotics, Artificial Intelligence, Cognitive Science

15/11/2018 – 31/07/2019 — Post-doctoral Researcher

CREATE
Via Claudio 21, 80125, Naples, Italy

Topic Robotics, Artificial Intelligence, Cognitive Science

01/11/2017 – 31/10/2018 — Research Fellow (Art. 22, Law 240/2010)

University of Naples "Federico II"

Topic Robotics, Artificial Intelligence, Cognitive Science

2020 – 2022 — Consultant

S4E Robotics
Via Ferrante Imparato 198, 80146 Naples, Italy

Technology transfer for autonomous planning and navigation techniques for mobile robots, applied to the sanitizing robot Endriu (s4erobotics.it/endriu/).

Topic Service Robotics, Artificial Intelligence

May 2016 – July 2016 — Visiting Student

Technical University of Munich (TUM), Munich, Germany

Development of a framework for kinesthetic teaching and machine learning of collaborative tasks.

Topic Human-Robot Interaction, Artificial Intelligence

October 2014 – February 2017

PhD Student (with scholarship)

PRISMA Lab – University of Naples "Federico II", Naples, Italy

Topic Robotics, Artificial Intelligence, Cognitive Science

September 2011 – January 2011

Consultant

S.Co.P.E. Center – University of Naples "Federico II", Naples, Italy

Development of a remote control system for university network devices via the Liferay CMS.

Topic Computer Networks

TEACHING ACTIVITIES

2024 – Present

Lecturer

University of Naples "Federico II"

Course leader of "Planning and Navigation", MSc in Automation and Robotics, 48 lecture hours (6 ECTS).

2023 – Present

Lecturer

University of Naples "Federico II"

Course leader of "Computer Networks I", BSc in Computer Science, 48 lecture hours (6 ECTS).

2023

Lecturer

University of Naples "Parthenope"

Course "Robotics: Tools for Programming", Master in Entrepreneurship and Innovation Management, 10 lecture hours.

2022 – Present

Lecturer

University of Naples "Federico II"

Course leader of "Digital Transformation and IT", BSc in Agricultural, Forestry and Environmental Sciences, 28 lecture hours (4 ECTS).

2022 – 2023

Lecturer

HU University of Applied Sciences, Utrecht, Netherlands

Teaching member for the Human Centered Artificial Intelligence (HCAIM) Intensive International Programme (Erasmus+), 40 hours of teaching, seminars, and student support.

2022 – 2023

Lecturer

University of Naples "Federico II"

Course leader of "Ethical Machine Learning and Data Mining Laboratory", Master in Human Centered Artificial Intelligence (HCAIM), 48 lecture hours (6 ECTS).

2016 – 2022

Seminar Organizer

University of Naples "Federico II"

Courses "Systems for Robot Governance (module B)" and "Intelligent Robotics" by Prof. Alberto Finzi, MSc in Computer Science.

2020 – 2021

Teaching Assistant

University of Naples "Federico II"

Course "Robotics and Autonomous Sensors" by Dr. Giuseppe A. Fontanelli, BSc in Precision and Livestock Farming, 16 lecture hours.

2020 – 2021 **Teaching Assistant**

University of Naples "Federico II"

Course "Robotics and Automated Solutions" by Dr. Fabio Ruggiero, BSc in Animal Production, 22 lecture hours.

2016 – 2017 **Tutor**

University of Naples "Federico II"

Tutoring for "Programming I" by Prof. Valeria Vittorini, BSc in Computer Engineering, 26 teaching hours and 10 hours of lab support.

2016 – Present **Thesis Supervision**

- Supervisor of 10+ BSc theses in Computer Science and Automation Engineering.
- Supervisor of 3+ MSc theses in Automation & Robotics and Autonomous Vehicle Engineering.
- Co-supervisor of 3+ MSc theses in Computer Science.
- External reviewer for Alessio Saccuti's PhD thesis (PhD in Information Technologies, University of Parma).

QUALIFICATIONS

2023 – 2034 **National Scientific Qualification (ASN) for Associate Professor**

Scientific Sector 01/B1 - Computer Science, valid from 12/12/2023 to 12/12/2034

EDUCATION

2017 **PhD in Computer Science** ISCED 6

University of Naples "Federico II"

Thesis title: Flexible Task Execution and Cognitive Control in Human-Robot Interaction

2013 **MSc in Computer Science** ISCED 5

University of Naples "Federico II"

Thesis title: An Architecture for the Attentional Regulation in Robotic Cognitive Control

SCIENTIFIC ACTIVITIES

Project Roles

- 2024 – Present, Local PI for project INVERSE, EU Horizon RIA, Grant ID 101136067. Unit funding: €587,500. Total project funding: €7,999,873.50.
- 2024 – Present, WP5 Leader (Task Execution, Inversion, and Quality Monitoring) for INVERSE project.
- 2023 – 2024, Local PI for AI-DROW project (PRIN, PNRR), Grant 2022BYSBYX.
- 2023 – Present, UNINA contact for the Leonardo Drone Contest.
- 2019 – 2022, UNINA lead for tasks 2.2, 5.2, 6.3 of ICOSAF project, funded by MIUR (PON RI&I 2014–2020).
- 2018 – 2020, UNINA leader for WP4 and WP5 of REFILLS project, EU H2020 RIA, Grant ID 731590.
- 2017 – 2018, UNINA lead for OR1, OR3, OR7, OR8 of RoMoLO project, funded by the Italian Ministry of Economic Development.

Participation in International Research Groups

- 2016 – Present, CREATE (https://www.create.unina.it/)
- 2016 – Present, PRISMA Lab (https://prisma.dieti.unina.it/)
- 2016 – Present, ICAROS (https://www.icaros.unina.it/)
- 2014 – 2016, PRISCA Lab
- 2016 – 2019, Human-centered Assistive Robotics group, TUM (https://www.ce.cit.tum.de/hcr/home/)
- 2014 – 2016, Robotics and InteractionS group, LAAS/CNRS Toulouse (https://www.laas.fr/public/en/ris)

International Workshop and Conference Organization

- 2023 – Present, Associate Editor for IEEE/RSJ IROS
- 2023 – Present, Associate Editor for IEEE ICRA
- 2021, Session Chair “Cognitive and Trustworthy Robotics”, ICAPS PlanRob Workshop
- 2020 – Present, Program Committee, ICAPS PlanRob Workshop
- 2020 – Present, Program Committee, AIxIA Robotics Workshop
- 2020, Program Committee, 13th Human-Friendly Robotics Workshop
- 2019, Program Committee, Robotics Track at ICAPS

Invited Speaker

- 2025, Invited speaker at "A scuola tra I.A. e relazione", Unipegaso & ANP – Talk: “Robotics and Active Learning: Embodied Intelligence for Teaching”.
- 2023, Invited talk at 50th anniversary of GARTEUR, session "AI in Aeronautics".
- 2022, Invited speaker, "Cognitive Robotics" workshop at Italian Robotics Conference (I-RIM).

PERSONAL SKILLS

Mother tongue: Italian

Other languages

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C1	C1	C1	C1

PUBLICATIONS

[1] Giuseppe Rauso, Riccardo Caccavale, and Alberto Finzi. “Combined Text-Visual Attention Models for Robot Task Learning and Execution”. In: *International Conference of the Italian Association for Artificial Intelligence*. Springer. 2024, pp. 228–240.

[2] Giuseppe Rauso, Riccardo Caccavale, and Alberto Finzi. “Incremental Learning of Robotic Manipulation Tasks through Virtual Reality Demonstrations”. In: *2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. IEEE. 2024, pp. 5176–5181.

[3] Vincenzo Scognamiglio, Riccardo Caccavale, Pasquale Merone, Alessandro de Crescenzo, Fabio Ruggiero, and Vincenzo Lippiello. “Autonomous Visual Inspection of Industrial Plants Using Unmanned Aerial Vehicles”. In: *2024 International Conference on Unmanned Aircraft Systems (ICUAS)*. IEEE. 2024, pp. 1148–1154.

[4] Mario Selvaggio, Rocco Moccia, Pierluigi Arpenti, Riccardo Caccavale, Fabio Ruggiero, Jonathan Cacace, Fanny Ficuciello, Alberto Finzi, Vincenzo Lippiello, Luigi Villani, et al. “Robotics goes PRISMA”. In: *Robotica* (2024), pp. 1–28.

[5] Giuseppe Rauso, Riccardo Caccavale, and Alberto Finzi. “Learning Robotic Manipulation Tasks based on Incremental Demonstrations in a Virtual Environment”. In: (2024).

[6] Riccardo Caccavale, Alberto Finzi, Gianluca Laudante, Ciro Natale, Salvatore Pirozzi, and Luigi Villani. “Manipulation of Boltlike Fasteners Through Fingertip Tactile Perception in Robotic Assembly”. In: *IEEE/ASME Transactions on Mechatronics* (2023).

[7] Jonathan Cacace, Riccardo Caccavale, Alberto Finzi, and Riccardo Grieco. “Combining human guidance and structured task execution during physical human–robot collaboration”. In: *Journal of Intelligent Manufacturing* 34.7 (2023), pp. 3053–3067.

[8] Riccardo Caccavale, Mirko Ermini, Eugenio Fedeli, Alberto Finzi, Vincenzo Lippiello, and Fabrizio Tavano. “A multi-robot deep Q-learning framework for priority-based sanitization of railway stations”. In: *Applied Intelligence* (2023), pp. 1–19.

[9] Fabrizio Tavano, Riccardo Caccavale, Mirko Ermini, Eugenio Fedeli, Luca Ricciardi, Alberto Finzi, and Vincenzo Lippiello. “Bioinspired Artificial Cockroach Colony Strategy Combined with 2-Type Fuzzy Logic for the Priority-Based Sanitization of Railway Stations”. In: *International Conference on Practical Applications of Agents and Multi-Agent Systems*. Springer. 2023, pp. 359–374.

[10] Riccardo Caccavale, Mirko Ermini, Eugenio Fedeli, Alberto Finzi, Emanuele Garone, Vincenzo Lippiello, and Fabrizio Tavano. “Combining hierarchical MILP-MPC and artificial potential fields for multi-robot priority-based sanitization of railway stations”. In: *International Symposium on Distributed Autonomous Robotic Systems*. Springer. 2022, pp. 438–452.

[11] Riccardo Caccavale, Mirko Ermini, Eugenio Fedeli, Alberto Finzi, Vincenzo Lippiello, and Fabrizio Tavano. “Toward a Heterogeneous Multi-robot Framework for Priority-Based Sanitization of Railway Stations”. In: *International Conference of the Italian Association for Artificial Intelligence*. Springer. 2022, pp. 387–401.

[12] Riccardo Caccavale and Alberto Finzi. “A rapidly-exploring random trees approach to combined task and motion planning”. In: *Robotics and Autonomous Systems* 157 (2022), p. 104238.

[13] Pierluigi Arpenti, Riccardo Caccavale, Andrea Giuseppe Fontanelli, Vincenzo Lippiello, Gianmarco Paduano, Bruno Siciliano, and Luigi Villani. “Robots Working in the Backroom: Depalletization of Mixed-Case Pallets”. In: *Robotics for Intralogistics in Supermarkets and Retail Stores*. Springer, 2022, pp. 81–115.

[14] Jonathan Cacace, Riccardo Caccavale, Alberto Finzi, and Riccardo Grieco. “Combining human guidance and structured task execution during physical human–robot collaboration”. In: *Journal of Intelligent Manufacturing* (2022), pp. 1–15.

[15] Riccardo Caccavale and Alberto Finzi. “A robotic cognitive control framework for collaborative task execution and learning”. In: *Topics in Cognitive Science* 14.2 (2022), pp. 327–343.

[16] Riccardo Caccavale, Ernesto Di Maio, Alberto Finzi, Andrea Fontanelli, Valerio Loianno, and Massimiliano Maria Villone. “An Autonomous Robotized Cell for Polymer Foaming”. In: (2022).

[17] Riccardo Caccavale, Vincenzo Calà, Mirko Ermini, Alberto Finzi, Vincenzo Lippiello, Fabrizio Tavano, et al. “Multi-robot sanitization of railway stations based on deep Q-learning”. In: *Proceedings of the 8th Italian Workshop on AI and Robotics (AIRO), Online*. Vol. 30. 2021.

[18] Riccardo Caccavale and Alberto Finzi. “Combining Task and Motion Planning through Rapidly-Exploring Random Trees”. In: *2021 European Conference on Mobile Robots (ECMR)*. IEEE, pp. 1–6.

[19] Riccardo Caccavale and Alberto Finzi. “Toward a Cognitive Control Framework for Explainable Robotics”. In: *International Workshop on Human-Friendly Robotics*. Springer. 2020, pp. 46–58.

[20] Pierluigi Arpenti, Riccardo Caccavale, Gianmarco Paduano, Giuseppe Andrea Fontanelli, Vincenzo Lippiello, Luigi Villani, and Bruno Siciliano. “RGB-D Recognition and Localization of Cases for Robotic Depalletizing in Supermarkets”. In: *IEEE Robotics and Automation Letters* 5.4 (2020), pp. 6233–6238.

[21] Giuseppe Andrea Fontanelli, Gianmarco Paduano, Riccardo Caccavale, Pierluigi Arpenti, Vincenzo Lippiello, Luigi Villani, and Bruno Siciliano. “A Reconfigurable Gripper for Robotic Autonomous Depalletizing in Supermarket Logistics”. In: *IEEE Robotics and Automation Letters* 5.3 (2020), pp. 4612–4617.

[22] Riccardo Caccavale, Pierluigi Arpenti, Gianmarco Paduano, Andrea Fontanellli, Vincenzo Lippiello, Luigi Villani, and Bruno Siciliano. “A flexible robotic depalletizing system for supermarket logistics”. In: *IEEE Robotics and Automation Letters* 5.3 (2020), pp. 4471–4476.

[23] Jonathan Cacace, Riccardo Caccavale, and Alberto Finzi. “Supervised Hand-Guidance during Human Robot Collaborative Task Execution: a Case Study.” In: *AIRO@ AI* IA*. 2020, pp. 1–6.

[24] Riccardo Caccavale and Alberto Finzi. “Learning attentional regulations for structured tasks execution in robotic cognitive control”. In: *Autonomous Robots* 43.8 (2019), pp. 2229–2243.

[25] Jonathan Cacace, Riccardo Caccavale, Alberto Finzi, and Vincenzo Lippiello. “Variable Admittance Control based on Virtual Fixtures for Human-Robot Co-Manipulation”. In: *2019 IEEE International Conference on Systems, Man and Cybernetics (SMC)*. IEEE. 2019, pp. 1569–1574.

[26] Riccardo Caccavale, Matteo Saveriano, Alberto Finzi, and Dongheui Lee. “Kinesthetic teaching and attentional supervision of structured tasks in human–robot interaction”. In: *Autonomous Robots* 43.6 (2019), pp. 1291–1307.

[27] Matteo Saveriano, Michael Seegerer, Riccardo Caccavale, Alberto Finzi, and Dongheui Lee. “Symbolic task compression in structured task learning”. In: *2019 Third IEEE International Conference on Robotic Computing (IRC)*. IEEE. 2019, pp. 171–176.

[28] Riccardo Caccavale and Alberto Finzi. “An Automated Guided Vehicle for Flexible and Interactive Task Execution in Hospital Scenarios.” In: *AIRO@ AI* IA*. 2019, pp. 39–46.

[29] Jonathan Cacace, Riccardo Caccavale, Alberto Finzi, and Vincenzo Lippiello. “Structured Task Execution during Human-Robot Co-manipulation.” In.

[30] Jonathan Cacace, Riccardo Caccavale, Alberto Finzi, and Vincenzo Lippiello. “Interactive plan execution during human-robot cooperative manipulation”. In: *IFAC-PapersOnLine* 51.22 (2018), pp. 500–505.

[31] Riccardo Caccavale, Matteo Saveriano, Giuseppe Andrea Fontanelli, Fanny Ficuciello, Dongheui Lee, and Alberto Finzi. “Imitation learning and attentional supervision of dual-arm structured tasks”. In: *2017 Joint IEEE International Conference on Development and Learning and Epigenetic Robotics (ICDL-EpiRob)*. IEEE. 2017, pp. 66–71.

[32] Riccardo Caccavale and Alberto Finzi. “Cognitive Control and Adaptive Attentional Regulations for Robotic Task Execution”. In: *Cognitive Robot Architectures* (2017), p. 56.

[33] Jonathan Cacace, Riccardo Caccavale, Alberto Finzi, and Vincenzo Lippiello. “Attentional multimodal interface for multidrone search in the Alps”. In: *2016 IEEE international conference on systems, man, and cybernetics (SMC)*. IEEE. 2016, pp. 001178–001183.

[34] Riccardo Caccavale and Alberto Finzi. “Flexible task execution and attentional regulations in human-robot interaction”. In: *IEEE Transactions on Cognitive and Developmental Systems* 9.1 (2016), pp. 68–79.

[35] Riccardo Caccavale, Jonathan Cacace, Michelangelo Fiore, Rachid Alami, and Alberto Finzi. “Attentional supervision of human-robot collaborative plans”. In: *2016 25th IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN)*. IEEE. 2016, pp. 867–873.

[36] Jonathan Cacace, Riccardo Caccavale, Alberto Finzi, and Vincenzo Lippiello. “A Human Multi-Robot Interaction Framework for Search and Rescue in the Alps.” In: *AIRO@ AI* IA*. 2016, pp. 56–60.

[37] Riccardo Caccavale, Alberto Finzi, Dongheui Lee, and Matteo Saveriano. “Integrated task learning and kinesthetic teaching for human-robot cooperation”. In: *Italian Workshop on Articial Intelligence and Robotics (AIRO)*. 2016.

[38] Riccardo Caccavale and Alberto Finzi. “Plan execution and attentional regulations for flexible human-robot interaction”. In: *2015 IEEE International Conference on Systems, Man, and Cybernetics*. IEEE. 2015, pp. 2453–2458.

[39] Jonathan Cacace, Riccardo Caccavale, Michelangelo Fiore, Rachid Alami, and Alberto Finzi. “Attentional Plan Execution for Human-Robot Cooperation”. In: *2nd Italian Workshop on Artificial Intelligence and Robotics (AIRO 2015), A workshop of the XIV International Conference of the Italian Association for Artificial Intelligence (AI* IA 2015)*. Vol. 1544. 2015, pp. 19–28.

[40] Riccardo Caccavale, Alberto Finzi, Dongheui Lee, Enrico Leone, Silvia Rossi, Matteo Saveriano, and Mariacarla Staffa. “Integrating multimodal interaction and kinesthetic teaching for flexible human-robot collaboration”. In: *8th International Workshop on Human-Friendly Robotics, HFR2015*. 2015.

[41] Riccardo Caccavale, Enrico Leone, Lorenzo Lucignano, Silvia Rossi, Mariacarla Staffa, and Alberto Finzi. “Attentional regulations in a situated human-robot dialogue”. In: *The 23rd IEEE International Symposium on Robot and Human Interactive Communication*. IEEE. 2014, pp. 844–849.