Curriculum Vitae

INFORMAZIONI PERSONALI

Nome	ADRIANO
Cognome	FAGIOLINI
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FORMAZIONE TITOLI

Education

PhD in Robotics and Automation University of Pisa (UNIPI), Italy
– Advisors: Prof. Antonio Bicchi and Prof. Gianluca Dini
– Jury Panel: Prof. John Lygeros, Prof. Jœrg Raisch, Prof. Alessandro Giua
– Title: "Boolean Consensus and Intrusion Detection for Secure Distributed Robotics"
Master's Degree in Computer Science Engineering UNIPI, Italy – Awarded cum laude
– Title: "Real-time planning and control of a mechanical device for catching mobile objects"

Titles and Awards

Certificate of Accomplishment of Intl. Doctoral Studies in Hybrid Control European Embedded Control Institute (EECI)
2nd Finalist of the ESA Lunar Robotics Challenge European Space Agency, Tenerife Island (Spain)
IEEE Best Manipulation Paper Award International Conference on Robotics and Automa- tion (ICRA), Barcelona (Spain)

ATTIVITA' DIDATTICA

Currently taught courses:
Mobile and Distributed Robotics 6 ECTS Master's Courses in Electronics Engineering & in Aerospace Engineering at UNIPA
Foundations of Robotics 9 ECTS Bachelor Course in Cybernetics Engineering at UNIPA
Automatic Control 9 ECTS Bachelor Courses in Computer Science Engineering & Man- agement Engineering at UNIPA

Previously taught courses:
Optimal Control of Mobile Robots 6 ECTS Master's Course in Automation Engineering at UNIPA
Introduction to Mobile Robots 3 ECTS Bachelor Course in Computer Science Engineering, Dzemal Bijedic u Mostaru, Mostar (Bosnia and Herzegovina)
Robotics 2 6 ECTS Master's Course in Automation Engineering, Assistant of Prof. A.Bicchi at UNIPI
System and Control Theory 12 ECTS tant of Prof. A.Balestrino at UNIPI

RICERCHE FINANZIATE

The Drone Project "Quadrotor Vehicles for Search & Rescue" Funded by University of South Pacific (USP), Fiji Islands
ROVER "Remotely Operated Vehicles for Environmental Research" Funded by Italian In- stitute for Geology and Vulcanology (INGV)
ROAD "RObotics for Assisted Diving" Funded by the Italian Scientific Research of High National Interest (PRIN) - Call 2012
HYCON2 "Highly Complex and Networked Control Systems" EU-funded Network of Excel- lence with contract ICT-257462
CHAT "Control of Heterogeneous Automation Systems" EU-funded Integrated Project with contract FP7-IST-2008-224428
– WP Contact person on Distributed algorithms, Safety and Security, and Integration
– Final demo manager for the use-cases on distributed collision avoidance and intrusion detection with real laser-guided vehicles
HYCON "Hybrid Control: Taming Heterogeneity and Complexity of Networked Embedded Systems" EU-funded Network of Excellence with contract IST-2004-511368

INCARICHI / CONSULENZE

Delegate for International Affairs Cybernetics Engineering Course at UNIPA
Head of Research Lab Mobile & Intelligent Robots @ Panormus Laboratory (MIRPALab)
Local Contact Person Italian University Consortium for Transportation and Logistics (NITEL)

ASSOCIAZIONI SCIENTIFICHE

I-RIM Member Italian Institute of Robotics and Intelligent Machines
SIDRA Member Societa' Italia dei Docenti e Ricercatori in Automatica

PUBBLICAZIONE
Journal Articles

1. A. Fagiolini, M. Trumic, and K. Jovanovic. "An input observer-based stiffness estimation approach for flexible robot joints". In: IEEE Robotics and Automation Letters 5.2 (2020), pp. 1843–1850.
2. M. Trumic , K. Jovanovic , and A. Fagiolini. "Decoupled nonlinear adaptive control of position and stiffness for pneumatic soft robots". In: International Journal of Robotics Research (2020).
3. A. Fagiolini, N. Dubbini, S. Martini, and A. Bicchi. "Convergence Analysis of Distributed Set-Valued Information Systems". In: IEEE Transactions on Automatic Control 61.6 (2016), pp. 1477–1491.
4. G. Oliva, D. La Manna, A. Fagiolini, and R. Setola. "Distributed data clustering via opinion dynamics". In: International Journal of Distributed Sensor Networks 2015 (2015).
5. F. Alonge, T. Cangemi, F. D'Ippolito, A. Fagiolini, and A. Sferlazza. "Convergence Analysis of Extended Kalman Filter for Sensorless Control of Induction Motor". In: IEEE Transactions on Industrial Electronics 62.4 (2015), pp. 2341–2352.
6. F. Alonge, F. D'Ippolito, A. Fagiolini, and A. Sferlazza. "Extended complex Kalman filter for sensorless control of an induction motor". In: Control Engineering Practice 27.1 (2014), pp. 1–10.
7. A. Fagiolini and A. Bicchi. "On the robust synthesis of logical consensus algorithms for dis- tributed intrusion detection". In: Automatica 49.8 (2013), pp. 2339–2350.
8. A. Bicchi, A. Fagiolini, and L. Pallottino. "Toward a society of robots: Behaviors, misbehaviors, and security". In: IEEE Robotics and Automation Magazine 17.4 (2010), pp. 26–36.

Conference Articles

1. F. Alonge, F. D'Ippolito, A. Fagiolini, G. Garraffa, F.M. Raimondi, and A. Sferlazza. "Tuning of extended kalman filters for sensorless motion control with induction motor". In: 2019 AEIT International Conference of Electrical and Electronic Technologies for Automotive, AEIT AUTO- MOTIVE 2019 (2019).
2. D. Caporale, A. Settimi, F. Massa, F. Amerotti, A. Corti, A. Fagiolini, M. Guiggian, A. Bicchi, and L. Pallottino. "Towards the design of robotic drivers for full-scale self-driving racing cars". In: Proceedings - IEEE International Conference on Robotics and Automation 2019-May (2019), pp. 5643–5649.
3. C. Bernardeschi, A. Fagiolini, M. Palmieri, G. Scrima, and F. Sofia. "ROS/Gazebo Based Sim- ulation of Co-operative UAVs". In: Lecture Notes in Computer Science (including subseries Lec- ture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 11472 LNCS (2019), pp. 321–334.
4. H.K. Mudaliar, D.M. Kumar, S.I. Azid, M. Cirrincione, A. Fagiolini, and M. Pucci. "Dynamical Compensation of the Load Torque in a High-Performance Electrical Drive with an Induction Mo- tor". In: ICEMS 2018 - 2018 21st International Conference on Electrical Machines and Systems (2018), pp. 1235–1240.
5. C. Sciortino and A. Fagiolini. "ROS/Gazebo-Based Simulation of Quadcopter Aircrafts". In: IEEE 4th International Forum on Research and Technologies for Society and Industry, RTSI 2018 - Proceedings (2018).
6. D. Caporale, A. Fagiolini, L. Pallottino, A. Settimi, A. Biondo, F. Amerotti, F. Massa, S. De Caro, A. Corti, and L. Venturini. "A Planning and Control System for Self-Driving Racing Vehicles". In: IEEE 4th International Forum on Research and Technologies for Society and Industry, RTSI 2018 - Proceedings (2018).
7. A. Duz, S. Phillips, A. Fagiolini, R.G. Sanfelice, and F. Pasqualetti. "Stealthy Attacks in Cloud- Connected Linear Impulsive Systems". In: Proceedings of the American Control Conference 2018-June (2018), pp. 146–152.
8. G. Oliva, A. Gasparri, A. Fagiolini, and C.N. Hadjicostis. "Distributed and proximity-constrained C-means for discrete coverage control". In: 2017 IEEE 56th Annual Conference on Decision and Control, CDC 2017 2018-January (2018), pp. 1584–1589.
9. A. Domenici, A. Fagiolini, and M. Palmieri. "Integrated simulation and formal verification of a simple autonomous vehicle". In: Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 10729 LNCS (2018), pp. 300–314.
10. M. Palmieri, C. Bernardeschi, A. Domenici, and A. Fagiolini. "Demo: Co-simulation of UAVs with INTO-CPS and PVSio- web". In: Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 11176 LNCS (2018), pp. 52–57.
11. G. Vitale, A. D'Alessandro, A. Costanza, and A. Fagiolini. "Low-cost underwater navigation systems by multi-pressure measurements and AHRS data". In: OCEANS 2017 - Aberdeen 2017-October (2017), pp. 1–5.
12. A. D'Alessandro, G. Vitale, S. Scudero, R. D'Anna, A. Costanza, A. Fagiolini, and L. Greco. "Characterization of MEMS accelerometer self-noise by means of PSD and Allan Variance analysis". In: Proceedings - 2017 7th International Workshop on Advances in Sensors and Interfaces, IWASI 2017 (2017), pp. 159–164.
13. A. D'Alessandro, C. Bottari, F. Bucalo, P. Capizzi, L. Cocchi, M. Coltelli, A. Costanza, G. D'Anna, R. D'Anna, A. Fagiolini, G. Fertitta, R. Martorana, G. Passafiume, S. Speciale, and G. Vitale. "A low cost customizable micro-ROV for environmental research-applications, advances and chal- lenges". In: 2nd Applied Shallow Marine Geophysics Conference, Near Surface Geoscience 2016 (2016).
14. A. Fagiolini, G. Dini, and A. Bicchi. "Distributed intrusion detection for the security of industrial cooperative robotic systems". In: IFAC Proceedings Volumes (IFAC-PapersOnline) 19 (2014), pp. 7610–7615.
15. G. Oliva, D.L. Manna, A. Fagiolini, and R. Setola. "Distance-constrained data clustering by combined k-means algorithms and opinion dynamics filters". In: 2014 22nd Mediterranean Con- ference on Control and Automation, MED 2014 (2014), pp. 612–619.
16. A. Fagiolini, M. Housh, A. Ostfeld, and A. Bicchi. "Distributed estimation and control of water distribution networks by logical consensus". In: ISCCSP 2014 - 2014 6th International Sympo- sium on Communications, Control and Signal Processing, Proceedings (2014), pp. 239–242.
17. G. Conte, D. Scaradozzi, L. Sorbi, S.M. Zanoli, F. D'Ippolito, A. Fagiolini, P. Pelaia, and M. Rocco. "ROAD project: Robotics for assisted diving". In: 2014 22nd Mediterranean Conference on Control and Automation, MED 2014 (2014), pp. 853–856.
18. L. Cancemi, A. Fagiolini, and L. Pallottino. "Distributed multi-level motion planning for au- tonomous vehicles in large scale industrial environments". In: IEEE International Conference on Emerging Technologies and Factory Automation, ETFA (2013).
19. S. Martini, A. Fagiolini, L. Giarre, and A. Bicchi. "Identification of distributed systems with logical interaction structure". In: Proceedings of the IEEE Conference on Decision and Control (2012), pp. 5228–5233.

20. S. Martini, A. Fagiolini, G. Zichittella, M. Egerstedt, and A. Bicchi. "Decentralized classification in societies of autonomous and heterogenous robots". In: Proceedings - IEEE International Conference on Robotics and Automation (2011), pp. 32–39.
21. S. Manca, A. Fagiolini, and L. Pallottino. "Decentralized coordination system for multiple AGVs in a structured environment". In: IFAC Proceedings Volumes (IFAC-PapersOnline) 44.1 PART 1 (2011), pp. 6005–6010.
22. S. Martini, D. Di Baccio, A. Fagiolini, and A. Bicchi. "Robust network agreement on logical infor- mation". In: IFAC Proceedings Volumes (IFAC-PapersOnline) 44.1 PART 1 (2011), pp. 13905– 13911.
23. A. Fagiolini, S. Martini, D. Di Baccio, and A. Bicchi. "A self-routing protocol for distributed consensus on logical information". In: IEEE/RSJ 2010 International Conference on Intelligent Robots and Systems, IROS 2010 - Conference Proceedings (2010), pp. 5151–5156.
24. A. Fagiolini, F.A.W. Belo, M.G. Catalano, F. Bonomo, S. Alicino, and A. Bicchi. "Design and control of a novel 3D casting manipulator". In: Proceedings - IEEE International Conference on Robotics and Automation (2010), pp. 4169–4174.
25. S. Alicino, M. Catalano, F. Bonomo, F.A.W. Belo, G. Grioli, R. Schiavi, A. Fagiolini, and A. Bicchi. "A rough-terrain, casting robot for the ESA lunar robotics challenge". In: 2009 IEEE/RSJ International Conference on Intelligent Robots and Systems, IROS 2009 (2009), pp. 3336– 3342.
26. A. Fagiolini, F. Babboni, and A. Bicchi. "Dynamic distributed intrusion detection for secure Multi-Robot systems". In: Proceedings - IEEE International Conference on Robotics and Au- tomation (2009), pp. 2723–2728.
27. A. Fagiolini, S. Martini, N. Dubbini, and A. Bicchi. "Distributed consensus on Boolean informa- tion". In: IFAC Proceedings Volumes (IFAC-PapersOnline) 1.PART 1 (2009), pp. 72–77.
28. A. Fagiolini, S. Martini, and A. Bicchi. "Set-valued consensus for distributed clock synchroniza- tion". In: 2009 IEEE International Conference on Automation Science and Engineering, CASE 2009 (2009), pp. 116–121.
29. A. Fagiolini, E.M. Visibelli, and A. Bicchi. "Logical consensus for distributed network agree- ment". In: Proceedings of the IEEE Conference on Decision and Control (2008), pp. 5250– 5255.
30. A. Bicchi, A. Fagiolini, G. Dini, and I.M. Savino. "Tolerating malicious monitors in detecting mis- behaving robots". In: Proceedings of the 2008 IEEE International Workshop on Safety, Security and Rescue Robotics, SSRR 2008 (2008), pp. 109–114.
31. A. Fagiolini, M. Pellinacci, G. Valenti, G. Dini, and A. Bicchi. "Consensus-based distributed intrusion detection for multi-robot systems". In: Proceedings - IEEE International Conference on Robotics and Automation (2008), pp. 120–127.
32. A. Fagiolini, L. Tani, A. Bicchi, and G. Dini. "Decentralized deployment of mobile sensors for optimal connected sensing coverage". In: Lecture Notes in Computer Science (including sub- series Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 5067 LNCS (2008), pp. 486–491.
33. A. Fagiolini, G. Valenti, L. Pallottino, G. Dini, and A. Bicchi. "Decentralized intrusion detec- tion for secure cooperative multi-agent systems". In: Proceedings of the IEEE Conference on Decision and Control (2007), pp. 1553–1558.
34. A. Fagiolini, G. Valenti, L. Pallottino, G. Dini, and A. Bicchi. "Local monitor implementation for decentralized intrusion detection in secure multi-agent systems". In: Proceedings of the 3rd IEEE International Conference on Automation Science and Engineering, IEEE CASE 2007 (2007), pp. 454–459.. Fagiolini, A. Bicchi, and B. Piccoli. "Steering dynamical systems with finite plans and limited path length". In: 2007 European Control Conference, ECC 2007 (2007), pp. 4685–4690.
35. A. Fagiolini, L. Greco, A. Bicchi, B. Piccoli, and A. Marigo. "Symbolic control for underactuated differentially flat systems". In: Proceedings - IEEE International Conference on Robotics and Automation 2006 (2006), pp. 1649–1654.
36. A. Fagiolini, H. Arisumi, and A. Bicchi. "Visual-based feedback control of casting manipulation". In: Proceedings - IEEE International Conference on Robotics and Automation 2005 (2005), pp. 2191–2196.

ATTIVITA' SCIENTIFICHE

IEEE Associate Editor
– Intl. Conf. on Intelligent Robots and Systems, Las Vegas (USA), 2020 – Intl. Conf. of Robotics and Automation, Paris (France), 2019
– Intl. Conf. on Intelligent Robots and Systems, Montreal (Canada), 2019 – Intl. Conf. of Intelligent Robots, Macau (China), 2018

Program Committee Member
– Annual Meeting of Automatica.it, Cagliari (Italy), 2020
– Annual Meeting of Automatica.it, Ancona (Italy), 2019
– IEEE MELECON, Palermo (Italy), 2020
– Formal Co-Simulation of Cyber-Physical Systems (CoSim-CPS), Trento (Italy), 2018 – Intl. Conference on e-Education, Mostar (Bosnia and Herzegovina), 2014

Organizer
– General Chair, NATO M&S COE Modelling & Simulation for Autonomous Systems Confer- ence, Prague (Czech), 2020, Palermo (Italy), 2019, Prague (Czech), 2018, Rome (Italy), 2017
– Publicity Chair and Publications Chair, IEEE Mediterranean Conference on Control and Au- tomation, Palermo (Italy), 2014
– Local Organizer, Annual Meeting of Automatica.it, Palermo (Italy), 2013

AMBITI DI RICERCA

- Soft Robotics
- Self-drving Racecars
- Autonomous Aircraft
- Security and Distributed Intrusion Detection in Cyber-Physical Systems

ALTRE ATTIVITA

Team Leader UNIPI team at 1st ESA Lunar Robotics Challenge
– Task: Design and development of a remotely operated rover for exploration and sample
retrieval on Moon-like craters.
– Challenge: climb 40-degree slopes on terrains with fine dust
Scientific Coordinator UNIPI team at Eurobot Challenge, Catania (Italy) – Task: Design and development of a fully-autonomous robot golf-player
Control Engineer Intecs, the Brainware Company, Pisa, www.intecs.it/eng – Task: Validation of the train gear control system for Trenitalia
Embedded Programmer European Organization for Nuclear Research (CERN)
– Task: Design and implementation of a CAN-bus protocol for the calibration of muon detector
boards in ATLAS (one the four experiments of the LHC)