Europass Curriculum Vitae

Personal information

Surname(s) / First name(s)	**Sabattini Lorenzo**
Address(es)	via Borromini 2/15, 42122 Reggio Emilia
Telephone(s)	+39 339 4568754
Email(s)	lorenzo.sabattini@unimore.it
Nationality(-ies)	Italian
Date of birth	March 26th, 1983
Gender	Male
Website	`https://www.arscontrol.org/lorenzo-sabattini/`
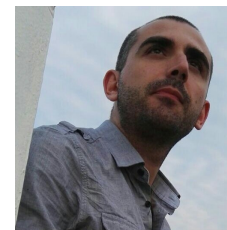
Short bio

Lorenzo Sabattini is an Associate Professor at the Department of Sciences and Methods for Engineering, University of Modena and Reggio Emilia, Italy. received his B.Sc. and M.Sc. in Mechatronic Engineering from the University of Modena and Reggio Emilia (Italy) in 2005 and 2007 respectively, and his Ph.D. in Control Systems and Operational Research from the University of Bologna (Italy) in 2012. In 2010 he has been a Visiting Researcher at the University of Maryland, College Park, MD (USA). In 2012 he has been a Postdoctoral Researcher and, from 2012 to 2017, he has been an Assistant Professor, at the University of Modena and Reggio Emilia.

His main research interests include multi-robot systems, decentralized estimation and control, and human interaction with robots and multi-robot systems.

He is one of the founding co-chairs of the IEEE RAS Technical Committee on Multi-Robot Systems: he has served as the corresponding co-chair since its foundation, in 2014.

He has served as a Guest Editor for the Special Issue on Networked Cooperative Autonomous Systems of the IEEE Transactions on Automation Science and Engineering (T-ASE), in 2014. From 2014 to 2016, he has been serving as Associate Editor for IJARS (Topic: Mobile Robots and Multi-Robot Systems). Since 2015, he has been serving as Associate Editor for the IEEE Robotics and Automation Letters (RA-L). Since 2017, he has been serving as Associate Editor for the IEEE Robotics and Automation Magazine (RA-M). He has been a co-organizer of the International Symposium on Multi-Robot and Multi-Agent Systems (MRS) 2017 and 2019: he has served as Program Chair and Area Chair for the 2017 edition, and as Editor-in-chief for the 2019 edition.

He has been serving as Associate Editor for IEEE ICRA 2015, 2016, and 2018, and IEEE/RSJ IROS 2015, 2016 and 2017. He has been member of the Program Committee of the IRMAS track of ACM/SIGAPP SAC 2015 and 2016, of RSS 2015 and 2017, and of DARS 2016 and 2018.

He co-organized workshops on Multi-Robot Systems at IEEE ICRA 2013, ICRA 2014, IROS 2014, RSS 2015, IROS 2015, IV 2016, ICRA 2016, ICRA 2017 and a workshop on Robotics and Logistics at ERF 2014. He also co-organized the 2016 IEEE RAS Summer School on Multi-Robot Systems.

Position

Dates	November 2018 – today

Position	**Associate Professor**
Main topics	Decentralized control of multi robot systems, and industrial applications of mobile robotics
Institution	*University of Modena and Reggio Emilia*

Teaching

Dates	2011– today
Course	**Digital Control**
Program	Master's Degree course in Mechatronic Engineering
Istitution	*Department of Engineering Sciences and Methods – DISMI (Reggio Emilia). University of Modena and Reggio Emilia*

Education, previous positions and other appointments

Dates	December 2017 – November 2018
Position	**Research fellow (Assegnista di ricerca)**
Main topics	Decentralized control of multi robot systems, and industrial applications of mobile robotics
Institution	*University of Modena and Reggio Emilia*
Dates	July 2017 – today
Position	**Affiliated faculty advisor**
Main topics	Advisor for the Beeclust Multi-Robot Systems Lab
Institution	*SRM University*, Chennai, India
Dates	December 2012 – November 2017
Position	**Assistant Professor (Ricercatore)**
Main topics	Decentralized control of multi robot systems, and industrial applications of mobile robotics
Institution	*University of Modena and Reggio Emilia*
Dates	April 2017
Certificate or diploma	Italian National Qualification (Abilitazione Scientifica Nazionale, ASN) for the position of Associate Professor
Dates	January 2012 – November 2012
Position	**Post–doc research fellow**
Main topics	Developments of control algoritms for multi robot systems
Institution	*University of Modena and Reggio Emilia*
Dates	January 2009 – April 2012
Certificate or diploma	**PhD in Control Systems and Operational Research**, (financed with scholarship)
Thesis	Nonlinear Control Strategies for Cooperative Control of Multi–Robot Systems
Main topics	Automation, mobile robotics, multi robot systems
Institution	Alma Mater Studiorum – *University of Bologna*
Dates	March 2010 – September 2010

Position	**Visiting student**
Main topics	Control of multi robot systems, development of distributed coordination algorithms. Supervisor: Dr. Nikhil Chopra
Institution	*University of Maryland*, College Park (MD), USA
Dates	April 2008 – December 2008
Position	**Research fellow**
Main topics	Developments of control algoritms for multi robot systems
Institution	*University of Modena and Reggio Emilia*
Dates	December 2007
Certificate or diploma	Engineering professional degree
Dates	October 2005 – October 2007
Certificate or diploma	**Master's Degree in Mechatronic Engineering**
Thesis	Development and experimental validation of algorithms for the formation control of mobile robots (in Italian: Sviluppo e verifica sperimentale di algoritmi di controllo di formazione per robot mobili)
Mark	110/110 summa cum laude
Institution	*University of Modena and Reggio Emilia*
Dates	October 2002 – October 2005
Certificate or diploma	**Bachelor's Degree in Mechatronic Engineering**
Thesis	Development of early warning algorithms to identify the actual gear ratio on board and recognition of faults in the related sensors (in Italian: Implementazione di algoritmi early warning di identificazione dei reali rapporti di trasmissione a bordo veicolo e riconoscimento malfunzionamenti della sensoristica relativa)
Mark	110/110 summa cum laude
Institution	*University of Modena and Reggio Emilia*

Editorial activity

Journals

Date	2017 - today
	Associate Editor for the IEEE Robotics and Automation Magazine (RA-M)
Date	2017 - today
	Guest Editor for the Special Issue on Multi-Robot and Multi-Agent Systems of Autonomous Robots (Springer)
Date	2015 - 2018
	Associate Editor for the IEEE Robotics and Automation Letters (RA-L)
Date	2015 - today
	Review Editor for Frontiers in Robotics and AI
Date	2014 - 2017
	Associate Editor for the International Journal of Advanced Robotic Systems (IJARS. Topic: Mobile Robots and Multi-Robot Systems)
Date	2014 - 2015
	Lead Guest Editor for the Special Issue on Networked Cooperative Autonomous System of the IEEE Transactions on Automation Science and Engineering (T-ASE)

Conferences

Date	2019

	Editor-in-chief for International Symposium on Multi-Robot and Multi-Agent Systems (MRS) 2019
Date	2018
	Associate Editor for IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2018
Date	2017
	Program Chair and Area Chair for International Symposium on Multi-Robot and Multi-Agent Systems (MRS) 2017
Date	2017
	Member of the Technical Committee of the NATO Modelling and Simulation for Autonomous Systems Workshop (MESAS) 2017
Date	2017
	Associate Editor for IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2017
Date	2017
	Member of the Program Committee of the Robotics Science and Systems (RSS) 2017
Date	2016
	Associate Editor for IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2016
Date	2016
	Member of the Program Committee of the International Symposium on Distributed Autonomous Robotic Systems (DARS) 2016
Date	2016
	Associate Editor for IEEE International Conference on Robotics and Automation (ICRA) 2016
Date	2015
	Member of the Program Committee of the Intelligent Robotics and Multi-Agent Systems (IRMAS) track of ACM/SIGAPP Symposium on Applied Computing (SAC) 2016
Date	2015
	Associate Editor for IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2015
Date	2015
	Associate Editor for IEEE International Conference on Robotics and Automation (ICRA) 2015
Date	2015
	Member of the Program Committee of the Robotics Science and Systems (RSS) 2015
Date	2014
	Member of the Program Committee of the Intelligent Robotics and Multi-Agent Systems (IRMAS) track of ACM/SIGAPP Symposium on Applied Computing (SAC) 2015
Organization of scientific events	
Date	2019
	Co-organizer and Editor-in-chief of the International Symposium on Multi-Robot and Multi-Agent Systems (MRS)
Date	2018
	Co-organizer of the ICRA 2018 Workshop WORKMATE: the WORKplace is better with intelligent, collaborative, robot MATEs
Date	2017
	Co-organizer and Program Chair of the International Symposium on Multi-Robot and Multi-Agent Systems (MRS)
Date	2017

	Co-organizer of the ICRA 2017 Workshop Human Multi-Robot Systems Interaction
Date	2016
	Co-organizer of the IEEE RAS Summer School on Multi-Robot Systems
Date	2016
	Co-organizer of the ICRA 2016 Workshop Fielded multi-robot systems operating on land, sea, and air
Date	2016
	Co-organizer of the IV 2016 Workshop Cooperative autonomous intelligent vehicles are advanced robotic systems of systems: current trends and challenges
Date	2015
	Co-organizer of the IROS 2015 Workshop Cooperative vehicles and robotic systems for industrial applications
Date	2015
	Co-organizer of the RSS 2015 Workshop Principles of Multi-Robot Systems
Date	2014
	Co-organizer of the IROS 2014 Workshop The future of multiple-robot research and its multiple identities
Date	2014
	Co-organizer of the ICRA 2014 Workshop Crossing the Reality Gap: Control, Human Interaction and Cloud Technology for Multi- and Many- Robot Systems
Date	2014
	Co-organizer of the ERF 2014 Workshop Advanced Robotics for Industrial Logistics
Date	2013
	Co-organizer of the ICRA 2013 Workshop Crossing the Reality Gap - From Single to Multi- to Many Robot Systems

Projects funded by public and institutions

Date	2017 - 2019
Project title	Maintenance and Control of Distributed Robot and Sensor Networks
Role	Scientific coordinator for the Italian unit
Funding	Ministry of Foreign Affairs and International Cooperation, Italy and Ministry of International Relations, Quebec, Canada
Description	The project *Maintenance and Control of Distributed Robot and Sensor Networks* has been funded by the ministries of international relationships of Italy and Quebec, with the aim of developing methodologies in the field of decentralized control of multi-robot networks.
	The project consortium is composed by the University of Modena and Reggio Emilia (coordinator: Dr. Lorenzo Sabattini) and by the Polytechnic of Montreal (coordinator: Dr. Giovanni Beltrame).
Date	2013 - 2015
Project title	Algorithms for keeping connectivity and communication efficiency in ad hoc networks of multi-robotic systems
Role	Scientific coordinator for the UNIMORE local unit
Funding	FAPESP, Brazil
Description	The project *Algorithms for keeping connectivity and communication efficiency in ad hoc networks of multi-robotic systems* has been funded by the Brazilian institution FAPESP, to create a collaboration between the Instituto Tecnológico de Aeronáutica (Brazil) and the University of Modena and Reggio Emilia (Italy). The coordinator of the project is Prof. Carlos Henrique Costa Ribeiro.

Acknowledgements

Date	2018
	I have been awarded with the "Fabrizio Flacco" Young Author Best Paper Award of the Italian Chapter of the IEEE Robotics and Automation Society for my paper
	A. Gasparri, L. Sabattini, and G. Ulivi. *Bounded control law for global connectivity maintenance in cooperative multi-robot systems*. IEEE Transactions on Robotics, 33(3):700-717, June 2017
Date	2018
	My paper
	M. Minelli, M. Kaufmann, J. Panerati, C. Ghedini, G. Beltrame, and L. Sabattini. *Stop, think, and roll: Online gain optimization for resilient multi- robot topologies*. In Proceedings of the International Symposium on Distributed Autonomous Robotic Systems (DARS), Boulder, CO, USA, oct. 2018
	has been selected as finalist for the DARS 2018 Best Paper Award
Date	2018
	The technical committee on Multi-robot System, for which I am serving as the corresponding co-chair, has been awarded with the IEEE RAS most technical committee award 2018
Date	2017
	I have been recipient of the FFABR (Fondo per il finanziamento delle attivitá base di ricerca) fund, from the Italian Ministry of Education, University and Research, awarded based on the scientific production in the period 2012-2016
Date	2017
	I have been elevated to the grade of Senior Member of the IEEE

Service for scientific societies

Date	2014 - Today
	L. Sabattini is one of the founders, together with A. Franchi (LAAS-CNRS, France) and N. Ayanian (Univ. of Southern California, USA) of the Technical Committee on Multi-Robot Systems, within the IEEE Robotics and Automation Society. Since its foundation, he is serving as the Corresponding Co-Chair

Memberships of scientific societies

Date	2018
	Member of the Nomination Committee of the IEEE RAS Award for Most Active Technical Committee (2019)
Date	2017 - Today
	Senior Member, IEEE
Date	2014 - Today
	Funding Co-Chair, and Corresponding Co-Chair, IEEE/RAS Technical Committee on Multi-Robot Systems
Date	2012 - 2017
	Member, IEEE/RAS Technical Committee on Networked Robots
Date	2008 - Today
	Member, IEEE
Date	2008 - Today
	Member, IEEE Robotics and Automation Society (RAS)
Date	2008 - Today
	Member, IEEE Control System Society (CSS)

Date	2014 - Today
	Member, IFAC Technical Committee 4.3 Robotics
Date	2016 - Today
	Member, IFAC Technical Committee 4.5 Human Machine Systems
Date	2015
	Member of the Triennial Review Committee for the Technical Committees of the IEEE Robotics and Automation Society

Scientific publications

International journals

[1] K. Khateri, M. Pourgholi, M. Montazeri, and L. Sabattini. A comparison between decentralized local and global methods for connectivity maintenance of multi-robot networks. *IEEE Robotics and Automation Letters*, 2019

[8] F. Boem, L. Sabattini, and C. Secchi. Decentralized state estimation for the control of network systems. *Journal of the Franklin Institute*, 356(2):860–882, January 2019

[2] J. Panerati, M. Minelli, C. Ghedini, L. Meyer, M. Kaufmann, L. Sabattini, and G. Beltrame. Robust connectivity maintenance for fallible robots. *Autonomous Robots*, 2018

[3] C. Talignani Landi, V. Villani, F. Ferraguti, L. Sabattini, C. Secchi, and C. Fantuzzi. Relieving operators' workload: Towards affective robotics in industrial scenarios. *Mechatronics*, 54:144–154, oct. 2018

[4] L. Sabattini, V. Digani, M. A. Hsieh, and C. Secchi. Coordination of multiple AGVs: a quadratic optimization method. *Autonomous Robots*, 2018

[5] L. Sabattini, C. Secchi, B. Capelli, and C. Fantuzzi. Passivity preserving force scaling for enhanced teleoperation of multi-robot systems. *IEEE Robotics and Automation Letters*, 3(3):1925–1932, 2018

[6] C. Ghedini, C. H. C. Ribeiro, and L. Sabattini. Toward efficient adaptive ad-hoc multi-robot network topologies. *Ad Hoc Networks*, 74:57 – 70, 2018

[7] Valeria Villani, Lorenzo Sabattini, Julia N. Czerniak, Alexander Mertens, and Cesare Fantuzzi. MATE robots simplifying my work: The benefits and socioethical implications. *IEEE Robotics Automation Magazine*, 25(1):37–45, March 2018

[9] L. Sabattini, C. Secchi, and C. Fantuzzi. Multi-robot systems implementing complex behaviors under time-varying topologies. *European Journal of Control*, 38:73–87, Nov. 2017

[10] Cinara Ghedini, Carlos Ribeiro, and Lorenzo Sabattini. Toward fault-tolerant multi-robot networks. *Networks*, 70(4):388–400, 2017

[11] L. Sabattini, M. Aikio, P. Beinschob, M. Boehning, E. Cardarelli, V. Digani, A. Krengel, M. Magnani, S. Mandici, F. Oleari, C. Reinke, D. Ronzoni, C. Stimming, R. Varga, A. Vatavu, S. Castells Lopez, C. Fantuzzi, A. Mäyrä, S. Nedevschi, C. Secchi, and K. Fuerstenberg. The pan-robots project: Advanced automated guided vehicle systems for industrial logistics. *IEEE Robotics Automation Magazine*, 25(1):55–64, March 2018

[12] N. Ayanian, R. Fitch, A. Franchi, and L. Sabattini. Multirobot systems [tc spotlight]. *IEEE Robotics Automation Magazine*, 24(2):12–16, June 2017

[13] E. Cardarelli, V. Digani, L. Sabattini, C. Secchi, and C. Fantuzzi. Cooperative cloud robotics architecture for the coordination of multi-AGV systems in industrial warehouses. *Mechatronics*, 45:1–13, August 2017

[14] V. Villani, L. Sabattini, G. Riggio, C. Secchi, M. Minelli, and C. Fantuzzi. A natural infrastructure-less human-robot interaction system. *IEEE Robotics and Automation Letters*, 2(3):1640–1647, July 2017

[15] A. Gasparri, L. Sabattini, and G. Ulivi. Bounded control law for global connectivity maintenance in cooperative multi-robot systems. *IEEE Transactions on Robotics*, 33(3):700–717, June 2017

[16] L. Sabattini, C. Secchi, and C. Fantuzzi. Collision avoidance for multiple lagrangian dynamical systems with gyroscopic forces. *International Journal of Advanced Robotic Systems (Invited Paper)*, 14(1):1–15, jan. 2017

[17] P. Beinschob, M. Meyer, C. Reinke, V. Digani, C. Secchi, and L. Sabattini. Semi-automated map creation for fast deployment of AGV fleets in modern logistics. *Robotics and Autonomous Systems*, 87:281–295, jan. 2017

[18] L. Sabattini, C. Secchi, and C. Fantuzzi. Coordinated dynamic behaviors for multirobot systems with collision avoidance. *IEEE Transactions on Cybernetics*, 47(12):4062–4073, dec. 2017

[19] V. Digani, L. Sabattini, and C. Secchi. A probabilistic Eulerian traffic model for the coordination of multiple AGVs in automatic warehouses. *IEEE Robotics and Automation Letters*, 1(1):26–32, jan. 2016

[20] L. Sabattini, C. Secchi, M. Cocetti, A. Levratti, and C. Fantuzzi. Implementation of coordinated complex dynamic behaviors in multi-robot systems. *IEEE Transactions on Robotics*, 31(4):1018–1032, aug. 2015

[21] V. Digani, L. Sabattini, C. Secchi, and C. Fantuzzi. Ensemble coordination approach in multi-AGV systems applied to industrial warehouses. *IEEE Transactions on Automation Science and Engineering*, 12(3):922–934, jul. 2015

[22] L. Sabattini, F. Ehlers, and D. Sofge. Guest editorial special issue on networked cooperative autonomous systems. *IEEE Transactions on Automation Science and Engineering*, 12(3):783 – 785, jul. 2015

[23] L. Sabattini, C. Secchi, and N. Chopra. Decentralized estimation and control for preserving the strong connectivity of directed graphs. *IEEE Transactions on Cybernetics*, 45(10):2273–2286, oct. 2015

[24] R. Falconi, L. Sabattini, C. Secchi, C. Fantuzzi, and C. Melchiorri. Edge-weighted consensus based formation control strategy with collision avoidance. *Robotica*, 33(02):332–347, February 2015

[25] L. Sabattini, C. Secchi, and N. Chopra. Decentralized connectivity maintenance for networked lagrangian dynamical systems with collision avoidance. *Asian Journal of Control (Invited Paper)*, 17(1):111–123, January 2015

[26] L. Sabattini, N. Chopra, and C. Secchi. Decentralized connectivity maintenance for cooperative control of mobile robotic systems. *The International Journal of Robotics Research (SAGE)*, 32(12):1411–1423, October 2013

[27] L. Sabattini, C. Secchi, N. Chopra, and A. Gasparri. Distributed control of multi-robot systems with global connectivity maintenance. *IEEE Transactions on Robotics*, 29(5):1326–1332, October 2013

[28] C. Secchi, L. Sabattini, and C. Fantuzzi. Decentralized global connectivity maintenance for interconnected lagrangian systems in the presence of data corruption. *European Journal of Control*, 19(6):461–468, December 2013

[29] L. Sabattini, C. Secchi, and C. Fantuzzi. Closed-curve path tracking for decentralized systems of multiple mobile robots. *Journal of Intelligent and Robotic Systems (Springer)*, 71(1):109–123, 2013

[30] L. Sabattini, C. Secchi, and C. Fantuzzi. Arbitrarily shaped formations of mobile robots: artificial potential fields and coordinate transformation. *Autonomous Robots (Springer)*, 30(4):385–397, may 2011

International conferences

[31] K. Karpe, D. Samiappan, K. Ramamoorthy, and L. Sabattini. Perturbation analysis of decentralised estimators. In *Proceedings of the IEEE International Conference on Robotics and Biomimetics (ROBIO)*, Kuala Lumpur, Malaysia, dec. 2018

[32] F. Loch, M. Fahimipirehgalin, M. Batut, J. N. Czerniak, A. Mertens, V. Villani, L. Sabattini, C. Fantuzzi, and B. Vogel-Heuser. An adaptive virtual training system based on universal design. In *Proceedings of the 2nd IFAC Conference on Cyber-Physical and Human-Systems (CPHS)*, Miami, FL, USA, dec. 2018

[33] M. Minelli, M. Kaufmann, J. Panerati, C. Ghedini, G. Beltrame, and L. Sabattini. Stop, think, and roll: Online gain optimization for resilient multi-robot topologies. In *Proceedings of the International Symposium on Distributed Autonomous Robotic Systems (DARS)*, Boulder, CO, USA, oct. 2018

[34] L. Sabattini, C. Fantuzzi, and C. Secchi. Teleoperation of a multi-robot system with adjustable dynamic parameters. In *Proceedings of the International Symposium on Distributed Autonomous Robotic Systems (DARS)*, Boulder, CO, USA, oct. 2018

[35] V. Villani, B. Capelli, and L. Sabattini. Use of virtual reality for the evaluation of human-robot interaction systems in complex scenarios. In *Proceedings of the IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN)*, Nanjing, China, aug. 2018

[36] V. Villani, L. Sabattini, C. Secchi, and C. Fantuzzi. A framework for affect-based natural human-robot interaction. In *Proceedings of the IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN)*, Nanjing, China, aug. 2018

[37] L. Sabattini, V. Villani, J. N. Czerniak, F. Loch, A. Mertens, B. Vogel-Heuser, and C. Fantuzzi. Methodological approach for the evaluation of an adaptive and assistive human-machine system. In *Proceedings of the IEEE Conference on Automation Science and Engineering (CASE)*, Munich, Germany, 2018. IEEE

[38] L. Sabattini, C. Secchi, and C. Fantuzzi. Controlling the interaction of a multi-robot system with external entities. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Brisbane, Australia, may 2018

[39] J. Czerniak, V. Villani, L. Sabattini, F. Loch, B. Vogel-Heuser, C. Fantuzzi, C. Brandl, and A. Mertens. Systematic approach to develop a flexible adaptive human-machine system. In *Proceedings of the 20th Congress International Ergonomics Association*, 2018

[40] V. Villani, L. Sabattini, A. Levratti, and C. Fantuzzi. An industrial social network for sharing knowledge among operators. In *Proceedings of the 16th IFAC Symposium on Information Control Problems in Manufacturing (INCOM)*, 2018

[41] F. Loch, J. N. Czerniak, V. Villani, C. Sabattini, L. Fantuzzi, A. Mertens, and B. Vogel-Heuser. An adaptive speech interface for assistance in maintenance and changeover procedure. In *Proceedings of the International Conference on Human-Computer Interaction (HCI)*, Las Vegas, NV, USA, jul. 2018

[42] L. Sabattini, C. Fantuzzi, and C. Secchi. Shaping the force feedback by dynamic scaling in the teleoperation of multi-robot systems. In *Proceedings of the IFAC Workshop on Lagrangian and Hamiltonian Methods for Non Linear Control (LHMNLC)*, Valparaiso, Chile, may 2018

[43] V. Villani, L. Sabattini, C. Secchi, and C. Fantuzzi. Natural interaction based on affective robotics for multi-robot systems. In *Proceedings of the IEEE International Symposium on Multi-Robot and Multi-Agent Systems (MRS)*, pages 56 – 62, Los Angeles, CA, USA, dec. 2017

[44] L. Sabattini, V. Villani, C. Secchi, and C. Fantuzzi. A general approach to natural human-robot interaction. In *Human Friendly Robotics. Springer Proceedings in Advanced Robotics*, volume 7, Naples, Italy, 2017. Springer

[45] L. Sabattini, V. Digani, C. Secchi, and C. Fantuzzi. Optimized simultaneous conflict-free task assignment and path planning for multi-agv systems. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Vancouver, Canada, sep. 2017

[46] C. Talignani Landi, F. Ferraguti, L. Sabattini, C. Secchi, M. Bonfe, and C. Fantuzzi. Variable admittance control preventing undesired oscillating behaviors in physical human-robot interaction. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Vancouver, Canada, sep. 2017

[47] V. Villani, L. Sabattini, J. N. Czerniak, A. Mertens, B. Vogel-Heuser, and C. Fantuzzi. Towards modern inclusive factories: a methodology for the development of smart adaptive human-machine interfaces. In *Proceedings of the IEEE International Conference on Emerging Technologies and Factory Automation (ETFA)*, Limassol, Cyprus, sep. 2017

[48] Lorenzo Sabattini, Valeria Villani, Julia N. Czerniak, Alexander Mertens, and Cesare Fantuzzi. Methodological approach for the design of a complex inclusive human-machine system. In *Proceedings of the 13th IEEE Conference on Automation Science and Engineering (CASE)*. IEEE, 2017

[49] V. Villani, L. Sabattini, G. Riggio, A. Levratti, C. Secchi, and C. Fantuzzi. Interacting with a mobile robot with a natural infrastructure-less interface. In *Proceedings of the IFAC World Congress*, Toulouse, France, jul. 2017

[50] C. Talignani Landi, F. Ferraguti, L. Sabattini, C. Secchi, and C. Fantuzzi. Admittance control parameter adaptation for physical human-robot interaction. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, pages 2911–2916, Singapore, may 2017

[51] L. Sabattini, C. Secchi, and C. Fantuzzi. Achieving the desired dynamic behavior in multi-robot systems interacting with the environment. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, pages 2097–2102, Singapore, may 2017

[52] M. Zareh, L. Sabattini, and C. Secchi. Enforcing biconnectivity in multi-robot systems. In *Proceedings of the IEEE Conference on Decision and Control (CDC)*, Las Vegas, NV, USA, dec. 2016

[53] M. Zareh, L. Sabattini, and C. Secchi. Decentralized biconnectivity conditions in multi-robot systems. In *Proceedings of the IEEE Conference on Decision and Control (CDC)*, Las Vegas, NV, USA, dec. 2016

[54] C. Ghedini, C. H. C. Ribeiro, and L. Sabattini. A decentralized control strategy for resilient connectivity maintenance in multi-robot systems subject to failures. In *Proceedings of the International Symposium on Distributed Autonomous Robotic Systems (DARS)*, London, UK, nov. 2016

[55] M. Zareh, L. Sabattini, and C. Secchi. Distributed laplacian eigenvalue and eigenvector estimation in multi-robot systems. In *Proceedings of the International Symposium on Distributed Autonomous Robotic Systems (DARS)*, London, UK, nov. 2016

[56] L. Sabattini, V. Digani, C. Secchi, and C. Fantuzzi. Hierarchical coordination strategy for multi-agv systems based on dynamic geodesic environment partitioning. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Daejeon, Korea, oct. 2016

[57] C. Ghedini, C. H. C. Ribeiro, and L. Sabattini. Improving the fault tolerance of multi-robot networks through a combined control law strategy. In *Proceedings of the International Workshop on Resilient Networks Design and Modeling (RNDM)*, Halmstadt, Sweden, sep. 2016

[58] F. Boem, L. Sabattini, and C. Secchi. Decentralized fault diagnosis for heterogeneous multi-agent systems. In *Proceedings of the International Conference on Control and Faul-Tolerant Systems (SysTol)*, Barcelona, Spain, sep. 2016

[59] V. Villani, L. Sabattini, N. Battilani, and C. Fantuzzi. Smartwatch-enhanced interaction with an advanced troubleshooting system for industrial machines. In *Proceedings of the IFAC/IFIP/IFORS/IEA Symposium on Analysis, Design, and Evaluation of Human-Machine Systems (HMS)*, Kyoto, Japan, aug. 2016

[60] L. Sabattini, C. Secchi, M. Lotti, and C. Fantuzzi. Coordinated motion for multi-robot systems under time varying communication topologies. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Stockholm, Sweden, may 2016

[61] L. Sabattini, C. Secchi, and C. Fantuzzi. Eigenvalue placement for asymptotic stability in piecewise linear switched systems. In *Proceedings of the IEEE Conference on Decision and Control (CDC)*, pages 4885–4890, Osaka, Japan, dec. 2015

[62] F. Boem, L. Sabattini, and C. Secchi. Decentralized state estimation for heterogeneous multi-agent systems. In *Proceedings of the IEEE Conference on Decision and Control (CDC)*, pages 4121–4126, Osaka, Japan, dec. 2015

[63] L. Sabattini, C. Secchi, A. Levratti, M. Cocetti, and C. Fantuzzi. Coordinated dynamic behaviors in multi-robot systems with time-varying topologies. In *Proceedings of the IEEE Conference on Decision and Control (CDC)*, pages 6190–6195, Osaka, Japan, dec. 2015

[64] E. Cardarelli, L. Sabattini, C. Secchi, and C. Fantuzzi. Cloud robotics paradigm for enhanced navigation of autonomous vehicles in real world industrial applications. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 4518–4523, Hamburg, Germany, sep.-oct. 2015

[65] C. Secchi, L. Sabattini, and C. Fantuzzi. Conducting multi-robot systems: gestures for the passive teleoperation of multiple slaves. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Hamburg, Germany, sep.-oct. 2015

[66] E. Cardarelli, L. Sabattini, V. Digani, C. Secchi, and C. Fantuzzi. Interacting with a multi AGV system. In *Proceedings of the IEEE International Conference on Intelligent Computer Communication and Processing (ICCP)*, Cluj-Napoca, Romania, sep. 2015

[67] F. Oleari, M. Magnani, D. Ronzoni, L. Sabattini, E. Cardarelli, V. Digani, C. Secchi, and C. Fantuzzi. Improving AGV systems: Integration of advanced sensing and control technologies. In *Proceedings of the IEEE International Conference on Intelligent Computer Communication and Processing (ICCP)*, Cluj-Napoca, Romania, sep. 2015

[68] C. Ghedini, C. Secchi, C. H. C. Ribeiro, and L. Sabattini. Improving robustness in multi-robot networks. In *Proceedings of the IFAC Symposium on Robot Control (SYROCO)*, Salvador, Brazil, aug. 2015

[69] L. Sabattini, V. Digani, M. Lucchi, C. Secchi, and C. Fantuzzi. Mission assignment for multi-vehicle systems in industrial environments. In *Proceedings of the IFAC Symposium on Robot Control (SYROCO)*, Salvador, Brazil, aug. 2015

[70] L. Sabattini, C. Secchi, A. Levratti, and C. Fantuzzi. Decentralized control of cooperative robotic systems for arbitrary setpoint tracking while avoiding collisions. In *Proceedings of the IFAC Symposium on Robot Control (SYROCO)*, Salvador, Brazil, aug. 2015

[71] L. Sabattini, E. Cardarelli, V. Digani, C. Secchi, C. Fantuzzi, and K. Fuerstenberg. Advanced sensing and control techniques for multi agv systems in shared industrial environments. In *Proceedings of the IEEE International Conference on Emerging Technologies and Factory Automation (ETFA)*, Luxembourg, sep. 2015

[72] V. Digani, M. A. Hsieh, L. Sabattini, and C. Secchi. A quadratic programming approach for coordinating multi-agv systems. In *Proceedings of the IEEE International Conference on Automation Science and Engineering (CASE)*, Gothenburg, Sweden, aug. 2015

[73] C. Secchi, L. Sabattini, and C. Fantuzzi. Port-hamiltonian based teleoperation of a multi-robot system on periodic trajectories. In *Proceedings of the IFAC Workshop on Lagrangian and Hamiltonian Methods for Non Linear Control (LHMNLC)*, Lyon, France, jul. 2015

[74] L. Sabattini, C. Secchi, and C. Fantuzzi. Cooperative dynamic behaviors in networked systems with decentralized state estimation. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Chicago, IL, USA, sep. 2014

[75] V. Digani, L. Sabattini, C. Secchi, and C. Fantuzzi. An automatic approach for the generation of the roadmap for multi-agv systems in an industrial environment. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Chicago, IL, USA, sep. 2014

[76] V. Digani, F. Caramaschi, L. Sabattini, C. Secchi, and C. Fantuzzi. Obstacle avoidance for industrial AGVs. In *Proceedings of the IEEE International Conference on Intelligent Computer Communication and Processing (ICCP)*, pages 227 – 232, Cluj-Napoca, Romania, sep. 2014

[77] E. Cardarelli, L. Sabattini, C. Secchi, and C. Fantuzzi. Multisensor data fusion for obstacle detection in automated factory logistics. In *Proceedings of the IEEE International Conference on Intelligent Computer Communication and Processing (ICCP)*, pages 221 – 226, Cluj-Napoca, Romania, sep. 2014

[78] F. Oleari, M. Magnani, D. Ronzoni, and L. Sabattini. Industrial AGVs: Toward a pervasive diffusion in modern factory warehouses. In *Proceedings of the IEEE International Conference on Intelligent Computer Communication and Processing (ICCP)*, pages 233 – 238, Cluj-Napoca, Romania, sep. 2014

[79] L. Sabattini, C. Secchi, and C. Fantuzzi. Controllability and observability preservation for networked systems with time varying topologies. In *Proceedings of the IFAC World Congress*, pages 1837 – 1842, Cape Town, South Africa, aug. 2014

[80] L. Sabattini, C. Secchi, M. Cocetti, and C. Fantuzzi. Implementation of arbitrary periodic dynamic behaviors in networked systems. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Hong Kong, China, jun. 2014

[81] V. Digani, L. Sabattini, C. Secchi, and C. Fantuzzi. Hierarchical traffic control for partially decentralized coordination of multi agv systems in industrial environments. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Hong Kong, China, jun. 2014

[82] A. Gasparri, A. Leccese, L. Sabattini, and G. Ulivi. Collective control objective and connectivity preservation for multi-robot systems with bounded input. In *Proceedings of the American Control Conference (ACC)*, Portland, OR, USA, jun. 2014

[83] M. Cocetti, L. Sabattini, C. Secchi, and C. Fantuzzi. Decentralized control strategy for the implementation of cooperative dynamic behaviors in networked systems. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 5902 – 5907, Tokyo, Japan, nov. 2013

[84] V. Digani, L. Sabattini, C. Secchi, and C. Fantuzzi. Towards decentralized coordination of multi robot systems in industrial environments: a hierarchical traffic control strategy. In *Proceedings of the IEEE International Conference on Intelligent Computer Communication and Processing (ICCP)*, Cluj-Napoca, Romania, sep. 2013

[85] L. Sabattini, V. Digani, C. Secchi, G. Cotena, D. Ronzoni, M. Foppoli, and F. Oleari. Technological roadmap to boost the introduction of agvs in industrial applications. In *Proceedings of the IEEE International Conference on Intelligent Computer Communication and Processing (ICCP)*, Cluj-Napoca, Romania, sep. 2013

[86] L. Sabattini, C. Secchi, and C. Fantuzzi. Collision avoidance using gyroscopic forces for cooperative lagrangian dynamical systems. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, pages 945–950, Karlsruhe, Germany, may 2013

[87] L. Sabattini, C. Secchi, and N. Chopra. Decentralized control for maintenance of strong connectivity for directed graphs. In *Proceedings of the IEEE Mediterranean Conference on Control and Automation (MED)*, Platanias-Chania, Crete - Greece, jun. 2013

[88] L. Sabattini, A. Levratti, F. Venturi, E. Amplo, C. Fantuzzi, and C. Secchi. Experimental comparison of 3d vision sensors for mobile robot localization for industrial application: stereo–camera and RGB–D sensor. In *Proceedings of the IEEE International Conference on Control, Automation, Robotics and Vision (ICARCV)*, Guangzhou, China, dec. 2012

[89] C. Secchi, L. Sabattini, and C. Fantuzzi. Decentralized global connectivity maintenance for interconnected lagrangian systems with communication delays. In *Proceedings of the IFAC Workshop on Lagrangian and Hamiltonian Methods for Non Linear Control (LHMNLC)*, Bertinoro, Italy, aug. 2012

[90] L. Sabattini, A. Gasparri, C. Secchi, and N. Chopra. Enhanced connectivity maintenance for multi–robot systems. In *Proceedings of the IFAC Symposium on Robot Control (SYROCO)*, Dubrovnik, Croatia, sep. 2012

[91] L. Sabattini, C. Secchi, and N. Chopra. Decentralized connectivity maintenance for networked lagrangian dynamical systems. In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, pages 2433–2438, St. Paul, MN, USA, may 2012

[92] L. Sabattini, N. Chopra, and C. Secchi. On decentralized connectivity maintenance for mobile robotic systems. In *Proceedings of the IEEE Conference on Decision and Control (CDC)*, pages 988 –993, Orlando, FL, USA, dec. 2011

[93] L. Sabattini, N. Chopra, and C. Secchi. Distributed control of multi–robot systems with global connectivity maintenance. In *Proceedings of the 2011 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 2321–2326, San Francisco, CA, USA, sept. 2011

[94] R. Falconi, L. Sabattini, C. Secchi, C. Fantuzzi, and C. Melchiorri. A graph–based collision–free distributed formation control strategy. In *Proceedings of the IFAC World Congress*, volume 18, Milano, Italy, 2011

[95] L. Sabattini, C. Secchi, C. Fantuzzi, and D. de Macedo Possamai. Tracking of closed-curve trajectories for multi–robot systems. In *Proceedings of the 2010 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 6089–6094, Taipei, Taiwan, oct. 2010

[96] L. Sabattini, C. Secchi, C. Fantuzzi, and A. Stefani. Bird's–eye view image for the localization of a mobile robot by means of trilateration. In *Proceedings of the IFAC Symposium on Intelligent Autonomous Vehicles (IAV)*, volume 7, Lecce, Italy, 2010

[97] L. Sabattini, C. Secchi, and C. Fantuzzi. Potential based control strategy for arbitrary shape formations of mobile robots. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems, 2009 (IROS)*, pages 3762–3767, St. Louis, MO, USA, oct. 2009

Book chapters

[98] L. Sabattini, E. Cardarelli, V. Digani, C. Secchi, and C. Fantuzzi. Multi agv systems in shared industrial environments: Advanced sensing and control techniques for enhanced safety and improved efficiency. In E. Messina, editor, *STP1594 on Autonomous Industrial Vehicles: From the Laboratory to the Factory Floor*. ASTM Selected Technical Papers, apr. 2016

Contributions to international workshops and symposia

[99] Valeria Villani, Lorenzo Sabattini, and Cesare Fantuzzi. Smart and adaptive interfaces for INCLUSIVE work environment. Workshop on WORKMATE 2018: the WORKplace is better with intelli- gent, collaborative, robot MATEs, held at the IEEE International Conference on Robotics and Automation (ICRA), may 2018. Brisbane, Australia

[100] Valeria Villani, Lorenzo Sabattini, Julia N. Czerniak, Alexander Mertens, and Cesare Fantuzzi. MATE robots simplifying my work: the benefits and socioethical implications. Workshop on WORKMATE 2018: the WORKplace is better with intelli- gent, collaborative, robot MATEs, held at the IEEE International Conference on Robotics and Automation (ICRA), may 2018. Brisbane, Australia

[101] V. Villani, B. Capelli, and L. Sabattini. Use of virtual reality for the evaluation of human-robot interaction systems in complex scenarios. Workshop on Robotics in Virtual Reality, held at the IEEE International Conference on Robotics and Automation (ICRA), may 2018. Brisbane, Australia

[102] L. Sabattini. MATE robots simplifying my work: an approach to the design of complex inclusive interaction systems. Workshop on WORK-MATE 2018: the WORKplace is better with intelli- gent, collaborative, robot MATEs, held at the IEEE International Conference on Robotics and Automation (ICRA) - Invited talk, may 2018. Brisbane, Australia

[103] F. Ehlers, L. Sabattini, and D. Sofge. Coordination design. Workshop on Principles of Multi-Robot Systems, held at Robotics: Science and Systems (RSS), jul. 2015. Rome, Italy

[104] L. Sabattini, E. Cardarelli, V. Digani, C. Secchi, and C. Fantuzzi. Multi agv systems in shared industrial environments: Advanced sensing and control techniques for enhanced safety and improved efficiency. Workshop on Autonomous Industrial Vehicles: From the Laboratory to the Factory Floor, held at the IEEE International Conference on Robotics and Automation (ICRA), may 2015. Seattle, WA, USA

[105] L. Sabattini and C. Secchi. Cooperative dynamic behaviors in hetero- geneous multi-robot systems. Workshop on Taxonomies of Interconnected Systems: Asymmetric Interactions in Distributed Robotics, held at the IEEE International Conference on Robotics and Automation (ICRA), may 2015. Seattle, WA, USA

[106] L. Sabattini. Decentralized connectivity maintenance for multi-robot systems. Workshop on Taxonomies of Interconnected Systems: Topology in Distributed Robotics, held at the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) - Invited talk, sep. 2014. Chicago, IL, USA

[107] C. Secchi, L. Sabattini, and C. Fantuzzi. Multimodal passivity based teleoperation of multiple slaves. Workshop on Telerobotics for Real-Life Applications: Opportunities, Challenges, and New Developments, held at the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), sep. 2014. Chicago, IL, USA

[108] L. Sabattini. Decentralized control of networked systems for setpoint tracking. Workshop on Crossing the Reality Gap: Control, Human Interaction and Cloud Technology for Multi- and Many- Robot Systems, held at the IEEE International Conference on Robotics and Automation (ICRA) - Invited talk, jun. 2014. Hong Kong, China

[109] V. Digani, L. Sabattini, C. Secchi, and C. Fantuzzi. Decentralized co- ordination enhanced by centralized information: multiple agvs in industrial application. Workshop On the Centrality of Decentralization in Multi-robot Systems: Holy Grail or False Idol?, held at the IEEE International Confer- ence on Robotics and Automation (ICRA), jun. 2014. Hong Kong, China

[110] L. Sabattini. On multi-agv systems for factory logistics: the pan-robots project. Workshop on Autonomous Vehicles for Long-Term Operation in In- dustrial Environments, euRobotics Forum (ERF) - Invited talk, mar. 2014. Rovereto, Italy

[111] V. Digani, L. Sabattini, C. Secchi, and C. Fantuzzi. Hierarchical traf- fic control for partially decentralized coordination of multi agv systems in industrial environments. Proceedings of the Workshop on Planning, Percep- tion and Navigation for Intelligent Vehicles (PPNIV), IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), nov. 2013. Tokyo, Japan

[112] L. Sabattini. Multi-AGV systems for factory logistics. Workshop on Crossing the Reality Gap - From Single to Multi- to Many Robot Systems, held at the IEEE International Conference on Robotics and Automation (ICRA) - Invited talk, may 2013. Karlsruhe, Germany

[113] L. Sabattini, C. Secchi, M. Cocetti, and C. Fantuzzi. Implementation of cooperative dynamic behaviors in networked systems with controllability preservation. Proceedings of the Workshop on Towards Fully Decentralized Multi-Robot Systems: Hardware, Software and Integration, held at the IEEE International Conference on Robotics and Automation (ICRA), may 2013. Karlsruhe, Germany

Italian conferences

[114] A. Gasparri, A. Leccese, L. Sabattini, and G. Ulivi. Bounded control law for global connectivity maintenance in cooperative multi-robot systems. AUTOMATICA_IT Congress, 2016. Rome, Italy

[115] L. Sabattini, C. Secchi, and C. Fantuzzi. Tracking of complex trajectories for leader-follower multi-robot systems. AUTOMATICA_IT Congress, 2014. Bergamo, Italy

[116] L. Sabattini, C. Secchi, C. Fantuzzi, N. Chopra, and A. Gasparri. Distributed global connectivity maintenance for multi–robot systems. AUTOMATICA_IT Congress, 2012. Benevento, Italy

[117] L. Sabattini, C. Secchi, and C. Fantuzzi. Potential based control strategy for abritrary shape formations of mobile robots. SIDRA Congress (Poster), 2009. Siracusa, Italy

[118] L. Sabattini, C. Secchi, and C. Fantuzzi. Formation control and obstacle avoidance. SIDRA Congress (Poster), 2008. Vicenza, Italy

PhD thesis

[119] L. Sabattini. *Nonlinear Control Strategies for Cooperative Control of Multi–Robot Systems*. PhD thesis, Alma Mater Studiorum – Universitá di Bologna, Bologna, Italy, 2012