

# ALESSANDRO FARINELLI

## CURRICULUM VITAE

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### PERSONAL DATA

Date of Birth: 18 June, 1976

Current Position: Associate Professor, SSD: INF/01

Institution: Università degli Studi di Verona, Dipartimento di Informatica  
(Computer Science Department)

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### ABSTRACT

Alessandro Farinelli is full professor at University of Verona, Department of Computer Science.

His research interests focus on developing novel methodologies for Artificial Intelligence systems applied to robotics and cyber physical systems. In particular, he focuses on multi-agent coordination, decentralized optimization, reinforcement learning and data analysis for cyber-physical systems.

Alessandro Farinelli was principal investigator for several national and international research projects in the broad area of Artificial Intelligence. His research contributions target mainly international journals in the area of Artificial Intelligence (e.g., Artificial Intelligence journal and Journal of Artificial Intelligence Research) and Autonomous Robotic Systems (Autonomous Robots and Robotics and Autonomous Systems). The main scientific conferences he contributes to (both as organizer and speaker) include the International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS), the International Joint Conference on Artificial Intelligence (IJCAI) and the International Conference on Intelligent Robots and Systems (IROS).

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## EDUCATION AND CAREER

### Career

2014-	Associate Professor at Computer Science Department, University of Verona, SSD INF/01.
2008–2014	Assistant Professor at Computer Science Department, University of Verona, SSD INF/01.
2008	Research Fellow at ECS (Electronic and Computer Science) Southampton University (UK), working with the research group headed by Prof. N. R. Jennings on the project “Control and Management of Autonomous Mobile Sensors” funded by SEAS DTC, Principal Investigators Prof. N. R. Jennings and Dr. Alex Rogers; Period: July 2008–December 2008.
2007–2008	Research Fellow at ECS (Electronic and Computer Science) Southampton University (UK), working with the research group headed by Prof. N. R. Jennings on the project “Market Based Control of Complex Computational Systems” funded by Engineering and Physical Sciences Research Council (EPSRC), Principal Investigator Prof. N. R. Jennings; Period: April 2007–July 2008.

2005–2007 two year post-doc at Dipartimento di Informatica e Sistemistica, Università di Roma *La Sapienza* on the project *An integrated framework for situation assessment and task assignment in real rescue scenarios*. Post-Doc Supervisor: Prof. Daniele Nardi; Period Aprile 2006–April 2007.

## Education

2005 PhD in Computer Science at Dipartimento di Informatica e Sistemistica (DIS), University of Rome *La Sapienza*. Thesis title: Distributed Task Assignment for Real World Environments.

2001–2004 Phd student with scholarship funded by the ministry of Education at Dipartimento di Informatica e Sistemistica, Università di Roma *La Sapienza*.

2001 Master Degree in Compute Science (Ingegneria Informatica) (5 years curriculum) final grade 110/110 cum Laude at University of Rome *La Sapienza*. Thesis title: Tecniche di pianificazione delle traiettorie in ambiente dinamico.

## Qualifications

- National Scientific Qualification (Abilitazione Scientifica Nazionale (ASN)) for full professor in Information Processing Systems (Sistemi di elaborazione delle informazioni), SC 09/H1 (Dal 05/12/2017 al 05/12/2023).
- National Scientific Qualification (Abilitazione Scientifica Nazionale (ASN)) for full professor in Computer Science (Informatica), SC 01/B1 (Dal 10/04/2017 al 10/04/2023).

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## RESEARCH ACTIVITY

### Awards

2018 *Nomination as best paper* for the 15th International Conference on Intelligent Autonomous Systems, Baden-Baden, Germany, Paper title: “Deep Learning Waterline Detection for Low-cost Autonomous Boats”, Steccanella L., Bloisi D., Blum J., Farinelli A.

2018 *Best poster* for the 33rd ACM Symposium on Applied Computing (SAC), Pau, France, Poster title: “Unsupervised Activity Recognition for Autonomous Water Drones”, Castellini A., Beltrame G., Bicego M., Blum J., Denitto M., Farinelli A.

- 2015 *Nomination as best paper in Innovative Applications Track* at International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS) 2015, Istanbul, Turkey, Paper title: “A Mechanism for Smoothly Handling Human Interrupts in Team Oriented Plans”, A. Farinelli, N. Marchi, M.M. Raeissi, N. Brooks, P. Scerri.
- 2008 *Best Industrial Demo* at International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS) 2008, Estoril, Portugal, demo title: “Max-Sum Decentralised Coordination for Sensor Systems” W. T. L. Teacy, A. Farinelli, N. J. Grabham, P. Padhy, A. Rogers, N. R. Jennings.
- 2007 winner of the RoboCup Rescue Infrastructure competition with the Aladdin Rescue team, University of Southampton UK. Team Members: Alessandro Farinelli, Sarvapali Ramchurn, Perukrishnen Vytelingum, Ioannis Vetsikas

## Research Projects – Principal Investigator

### International and national research projects funded on the basis of competitive calls with peer reviews

- 2017-2018 Title: Active Malware Analysis based on Reinforcement Learning techniques; Funded by: University of Verona (Joint projects, cooperation scheme with industrial partners), Industrial partner: Cythereal Inc., 2017; Project Duration: 12 months; Role: PI €153K (University contribution: €76K). The project funded one research fellowship position (AdR, INF/01) for 12 months, one research contract position (BdR) for 5 months.
- 2016-2020 Title: Development and application of Novel, Integrated Tools for monitoring and managing Catchments (INTCATCH); Funded by: EU, H2020, WATER-1-2014/2015, 2015; Project Duration: 48 months; Role: PI for the UNIVR research unit on AI and robotics, WP leader (WP4) and technical director for the project, €8.7 M (€370 K for the research unit). The project funded one research fellowship position (AdR, INF/01) for 24 months, three research fellowship position (AdR, INF/01) for 12 months and a temporary faculty position (RTDa, ING-INF/05) at the Computer Science Department, University of Verona.
- 2013-2014 Title: Controllo automatico di processo per risparmio energetico e recupero di risorse dalle acque reflue (automatic process control for energy saving and resource recovery in waste water management); together with INNOven s.r.l. and EDALab s.r.l. Funded by: Regione Veneto (Fondo Sociale Europeo), 2013; Project duration: 12 months (2 Research contracts of 12 months each) Role: Principal Investigator, €71 K. The project funded two research fellowship positions (AdR, ING-IND/25 and ING-INF/05), 12 months

each, at the Computer Science Department, University of Verona.

### Research projects funded by qualified public and private institutions

- 2017-2018      Title: Data analysis and high level control for autonomous water drones (Analisi dei dati e controllo di alto livello per droni acquatici autonomi); Partially Funded by: Computer Science Department, University of Verona, 2017; Role: Principal Investigator, €23.5 K (Department contribution €7.936 K). The project funded one research fellowship position (AdR, INF/01) for 12 months.
- 2016-2017      Title: Data collection and analysis for water monitoring with robotic platforms (Analisi e acquisizione dati per il monitoraggio dell'acqua tramite piattaforme robotiche); Partially Funded by: Computer Science Department, University of Verona, 2016; Role: Principal Investigator, €23.5 K (Department contribution €11.75 K). The project funded one research fellowship position (AdR, INF/01) for 12 months.
- 2015-2016      Title: Artificial Intelligence models and techniques for sustainable mobility (Sviluppo di modelli e tecniche di Intelligenza Artificiale per la mobilità sostenibile); Partially Funded by: Computer Science Department, University of Verona, 2015; Role: Principal Investigator, €24 K (Department contribution €22 K). The project funded one research fellowship position (AdR, INF/01) for 12 months.
- 2012-2013      Title: RMAStBench: Benchmarking Dynamic Multi-Agent Coordination in Urban Search and Rescue; Together with Linköping University and University of Southampton; Funded by: RoboCup Federation, 2012; Project duration: 12 months Role: Principal Investigator for the Research Unit of Verona, US\$ 3.9 K.
- 2011-2012      Title: Agent-Based Coordination Approaches for Intelligent Sensor Networks (Coordinamento multi-agente per reti di sensori intelligenti); Funded by: Computer Science Department, University of Verona, 2011; Role: Principal Investigator, €19 K. The project funded one research fellowship position (AdR, ING-INF/05) for 12 months.
- 2005-2007      Title: An integrated framework for situation assessment and task assignment in real rescue scenarios; Funded by: EOARD (European Office of Aerospace Research and Development, Award No. FA8655-05-1-3015), 2005; Project duration: 24 months Role: Co-PI, US\$ 74 K.

### Research Projects – Research Collaborator

- 2019-2020      Title: Model-Based Design and Verification Flow for Embedded Vision Applications; Funded by: Istituto Nazionale di

- Alta Matematica (INdAM); Role: supervisor for the development of Simultaneous Localization And Mapping (SLAM) techniques that can operate on low-power embedded devices; Project duration: 12 months.
- 2018-2022 Title: Computer Engineering for Industry 4.0; Funded by: Ministero dell'Istruzione dell'Università e della Ricerca (MIUR), Dipartimenti di Eccellenza; Role: co-supervisor (together with Paolo Fiorini) for the activities related to the development of intelligent robotic systems for Industry 4.0 (Enabling Technology 1: Advanced Manufacturing Solutions); Project duration: 60 months.
- 2017-2020 Title: Global House Thermal & Electrical Energy Management (GHOTEM); funded by: Regione Veneto (POR - Obiettivo "Incremento dell'attività di innovazione delle imprese" Parte FESR fondo europeo di sviluppo regionale 2014-2020); Role: supervisor for one research fellow position (AdR, 12 months) on topics related to the development of data analysis methods and Artificial Intelligence approaches for energy management in the smart grid; Project duration: 36 months.
- 2017-2020 Title: "Riposizionamento Competitivo della filiera del legno" (COREWOOD); funded by: Regione Veneto (POR - Obiettivo "Incremento dell'attività di innovazione delle imprese" Parte FESR fondo europeo di sviluppo regionale 2014-2020); Role: supervisor for one research fellow position (AdR, 18 months) on topics related to the development of data analysis methods and Artificial Intelligence approaches for energy management in smart buildings; Project duration: 36 months.
- 2016-2018 Title: EXPO-AGRI: EXtra-field Plant Observation for monitoring and forecast of agricultural infections; Funded by: Regione Veneto (Fondo Sociale Europeo); Role: research manager for the AI activities; Project duration: 24 months.
- 2008-2009 Title: Control and Management of Autonomous Mobile Sensors Funded by: SEAS DTC (Systems Engineering for Autonomous Systems Defence Technology Centre, UK, Contract No. C/WPE/N03751); Role: development of decentralized optimization techniques for coordinating low-power devices; Project duration: 30 months.
- 2005-2009 Title: Market Based Control of Complex Computational Systems Funded by: EPSRC (Engineering and Physical Sciences Research Council - EPSRC Reference GR/T10664/01); Role: development of decentralized constraint optimization

techniques for multi-agent system coordination; Project Duration: 60 months.

2003-2005      Title: Sistemi di simulazione e robotici per l'intervento in scenari di emergenze (Simulation and robotic systems for operation in emergency scenarios) Funded by: MIUR (2003 - prot. 2003097252); Role: development of coordination approaches for multi-robot system operating in rescue scenarios; Project duration: 24 months.

2003-2006      Title: RoboCare Funded by: MIUR (2002); Role: development of path planning techniques for service robots; Project duration: 36 months.

### Research Visits

2008-2009      Research visitor in the agent group headed by Prof. N. R. Jennings, ECS (Electronic and Computer Science) University of Southampton, UK; Period: December 2008-May 2009.

2003-2004      Research visitor in the Teamcore Research Group, headed by Prof. Milind Tambe, University of Southern California, Los Angeles, CA, USA; Period: November 2003-June 2004.

### National and International collaborations

Chania, Greece      Collaboration with Technical University of Crete (TUC). Main collaborator: Prof. Georgios Chalkiadakis.

USRA, US      Research agreement with Universities Space Research Association (USRA) for the use of quantum machines (the D-Wave). Main Collaborator: Dr. Davide Venturelli.

Barcelona, Spain      IIIA-CSIC, Main collaborators: Dr. Juan-Antonio Rodriguez Aguilar, Dr. Jesus Cerquides Bueno, Dr. Pedro Meseguer.

Bar Ilan, Israele      Industrial Engineering and Management, Ben Gurion University of the Negev. Main collaborators: Dr. Roie Zivan, Dr. Harel Yedidsion

California, US      TEAMCORE research group, University of Southern California. Main collaborators: Prof. Milind Tambe.

Minneapolis, US      College of Science and Engineering, University of Minnesota. Main collaborators: Prof. Maria Gini.

Pittsburgh, US      Robotic Institute, Carnegie Mellon University. Main collaborators: Dr. Paul Scerri.

Padova      Intelligent Autonomous System Laboratory (IAS-Lab), Dipartimento di Ingegneria dell'Informazione (DEI), Università degli studi di Padova. Main collaborators: Prof. Enrico Pagello, Prof. Emanuele Menegatti.

Roma Dipartimento di Ingegneria Informatica, Automatica e Gestionale (DIAG), Sapienza Università di Roma. Main collaborators: Prof. Daniele Nardi, Prof. Luca Iocchi.

Southampton, UK Cooperation agreement with Southampton University for exchanging PhD students, Post-Docs and researchers.

Southampton, UK Agents, Interaction and Complexity Group, Electronics and Computer Science (ECS), Faculty of Physical Sciences and Engineering. Main collaborators: Dr. Sarvapali Ramchurn, Dr. Alex Rogers, Prof. Nick Jennings.

## Publications

### Bibliometric Indices

Bibliometric indicators according to google scholar and scopus databases (last updated 30th September 2019)

	Google Scholar	Scopus
Number of publications	188	125
H-index	26	16
Number of citations	3169	1445

## Publications

For international journals the classification according to Scimago<sup>1</sup> is reported, indicating also the subject category. The reported classification refers to the year of publication. For the publications of 2019 the last available data is reported (i.e., 2018).

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### International Journals

[J.1] Raeissi, M. M., Farinelli, A. Cooperative Queuing Policies for Effective Scheduling of Operator Intervention. *Autonomous Robots (Q1, Artificial Intelligence)*, In Press (first online: 15 July 2019), pp. 1-10, ISSN: 0929-5593, 2019, doi:10.1007/s10514-019-09877-w .

[J.2] Bottarelli, L., Bicego, M., Blum, J., Farinelli, A. Orienteering-based informative path planning for environmental monitoring. *Engineering Applications of Artificial Intelligence (Q1, Artificial Intelligence)*, 77, pp. 46-58, ISSN: 0952-1976, 2019, doi:10.1016/j.engappai.2018.09.015

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<sup>1</sup>url <https://www.scimagojr.com/>



- [J.3] Bistaffa, F., Farinelli, A. A COP model for graph-constrained coalition formation. *Journal of Artificial Intelligence Research (Q1, Artificial Intelligence)*, 62, pp. 133-153, ISSN: 1076-9757, 2018, doi:10.1613/jair.1.11205
- [J.4] Yedidsion, H., Zivan, R., Farinelli, A. Applying max-sum to teams of mobile sensing agents. *Engineering Applications of Artificial Intelligence (Q1, Artificial Intelligence)*, 71, pp. 87-99, ISSN: 0952-1976, 2018, doi:10.1016/j.engappai.2018.02.017
- [J.5] Bottarelli, L., Bicego, M., Denitto, M., Di Pierro, A., Farinelli, A., Mengoni, R. Biclustering with a quantum annealer. *Soft Computing (Q2, Theoretical Computer Science)*, 22 (18), pp. 6247-6260, ISSN: 1432-7643, 2018, doi:10.1007/s00500-018-3034-z
- [J.6] Parker, J., Farinelli, A., Gini, M. Lazy max-sum for allocation of tasks with growing costs. *Robotics and Autonomous Systems (Q1, Computer Science Applications)*, 110, pp. 44-56, ISSN: 0921-8890, 2018, doi:10.1016/j.robot.2018.08.015
- [J.7] M., Bicego, A., Farinelli, E., Grosso, D., Paolini, S.D., Ramchurn. On the distinctiveness of the electricity load profile. *Pattern Recognition, (Q1, Artificial Intelligence)*, 74, pp. 317-325, ISSN: 0031-3203, 2018, doi:10.1016/j.patcog.2017.09.039
- [J.8] M. Denitto, A. Farinelli, M. A. T. Figueiredo, M. Bicego. A biclustering approach based on factor graphs and the max-sum algorithm. *Pattern Recognition (Q1, Artificial Intelligence)*, 62, pp. 114-124, ISSN: 0031-3203, 2017, doi:10.1016/j.patcog.2016.08.033
- [J.9] F. Bistaffa, A. Farinelli, G. Chalkiadakis, S. D. Ramchurn. A cooperative game-theoretic approach to the social ridesharing problem. *Artificial Intelligence (Q1, Artificial Intelligence)*, 246, pp. 86-117, ISSN: 0004-3702, 2017, doi:10.1016/j.artint.2017.02.004
- [J.10] A. Farinelli, M. Bicego, F. Bistaffa, S. D. Ramchurn. A hierarchical clustering approach to large-scale near-optimal coalition formation with quality guarantees. *Engineering Applications of Artificial Intelligence (Q1, Artificial Intelligence)*, 59, pp. 170-185, ISSN: 0952-1976, 2017, doi:10.1016/j.engappai.2016.12.018
- [J.11] A. Farinelli, N. Boscolo, E. Zanotto, E. Pagello. Advanced approaches for multi-robot coordination in logistic scenarios. *Robotics and Autonomous Systems (Q1, Artificial Intelligence)*, 90, pp. 34-44, ISSN: 0921-8890, 2017, doi:10.1016/j.robot.2016.08.010

- [J.12] F., Lezama, J., Palominos, A.Y., Rodríguez-González, A., Farinelli, E., Muñoz de Cote. Agent-Based Microgrid Scheduling: An ICT Perspective. *Mobile Networks and Applications* (**Q1, Computer Networks and Communications**), pp. 1-17, ISSN: 1383-469X, 2017, doi:10.1007/s11036-017-0894-x.
- [J.13] F. Bistaffa, A. Farinelli, J. Cerquides, J. Rodríguez-Aguilar, S. D. Ramchurn. Algorithms for graph-constrained coalition formation in the real world. *ACM Transactions on Intelligent Systems and Technology* (**Q1, Artificial Intelligence**), 8 (4), art. no. 60, pp. 1-24, ISSN: 2157-6904, 2017, doi:10.1145/3040967
- [J.14] F. Bistaffa, N. Bombieri, A. Farinelli. An Efficient Approach for Accelerating Bucket Elimination on GPUs. *IEEE Transactions on Cybernetics* (**Q1, Computer Science Applications**), 47 (11), pp. 3967-3979, ISSN: 2168-2267, 2017, doi:10.1109/TCYB.2016.2593773
- [J.15] M., Roncalli, F., Bistaffa, A., Farinelli. Decentralized Power Distribution in the Smart Grid with Ancillary Lines: An Approach Based on Distributed Constraint Optimization. *Mobile Networks and Applications* (**Q1, Computer Networks and Communications**), pp. 1-9, ISSN:1383-469X, 2017, doi:10.1007/s11036-017-0893-y.
- [J.16] A. Farinelli, L. Iocchi, D. Nardi. Distributed on-line dynamic task assignment for multi-robot patrolling. *Autonomous Robots* (**Q1, Artificial Intelligence**), 41 (6), pp. 1321-1345, ISSN: 0929-5593, 2017, doi:10.1007/s10514-016-9579-8
- [J.17] A. Farinelli, M. M. Raeissi, N. Marchi, N. Brooks, P. Scerri. Interacting with team oriented plans in multi-robot systems. *Autonomous Agents and Multi-Agent Systems* (**Q2, Artificial Intelligence**), 31 (2), pp. 332-361, ISSN: 1387-2532, 2017, doi:10.1007/s10458-016-9344-6
- [J.18] M. Denitto, M., Bicego, A., Farinelli, M.A.T., Figueiredo. Spike and slab biclustering. *Pattern Recognition* (**Q1, Artificial Intelligence**), 72, pp. 186-195, ISSN: 0031-3203, 2017, doi:10.1016/j.patcog.2017.07.021
- [J.19] M. Tamassia, A. Farinelli, V. Murino, and A. Del Bue. Directional Visual Descriptors and Multirobot Strategies for Large-Scale Coverage Problems. *Journal of Field Robotics* (**Q1, Computer Science Applications**), 33(4): pp. 489-511, ISSN: 1556-4959, 2016, doi:10.1002/rob.21612
- [J.20] M. Vinyals, K. S. Macarthur, A. Farinelli, S. D. Ramchurn, N. R. Jennings. A message-passing approach to decentralised parallel machine scheduling. *The Computer Journal* (**Q2, Computer Science**

- (**miscellaneous**)), 57(6): pp. 856-874, ISSN: 0010-4620, 2014, doi: 10.1093/comjnl/bxt140.
- [J.21] J. Cerquides, A. Farinelli, P. Meseguer, S. D. Ramchurn. A Tutorial on Optimization for Multi-Agent Systems. *The Computer Journal* (**Q2, Computer Science (miscellaneous)**), 57(6): pp. 799-824, ISSN: 0010-4620, 2014, doi: 10.1093/comjnl/bxt146
- [J.22] A. Farinelli, A. Rogers, N. R. Jennings. Agent-based decentralised coordination for sensor networks using the max-sum algorithm. *Journal of Autonomous Agents and Multi-Agent Systems* (**Q2, Artificial Intelligence**), 28(3): pp. 337-380, ISSN: 1387-2532, 2014, doi:10.1007/s10458-013-9225-1.
- [J.23] A. Farinelli, D. Nardi, R. Pigliacampo, M. Rossi, and G. P. Settembre. Cooperative situation assessment in a maritime scenario. *International Journal of Intelligent Systems* (**Q1, Artificial Intelligence**), 27(5): pp. 477-501, ISSN: 0884-8173, 2012, doi:10.1002/int.21532.
- [J.24] A. Rogers, A. Farinelli, R. Stranders, N. R. Jennings. Bounded approximate decentralised coordination via the max-sum algorithm. *Artificial Intelligence* (**Q1, Artificial Intelligence**), 175(2):pp. 730-759, ISSN: 0004-3702, 2011, DOI:10.1016/j.artint.2010.11.001.
- [J.25] A. Farinelli, H. Fujii, N. Tomoyasu, M. Takahashi, A. D'Angelo, E. Pagello. Cooperative control through objective achievement. *Robotics and Autonomous Systems* (**Q1, Computer Science Applications**), 58(7): pp. 910-920, ISSN: 0921-8890, 2010, doi:10.1016/j.robot.2010.03.012.
- [J.26] S. D. Ramchurn, A. Farinelli, K. S. Macarthur, N. R. Jennings. Decentralized Coordination in RoboCup Rescue. *Computer Journal* (**Q1, Computer Science (miscellaneous)**), 53(9): pp. 1447-1461, ISSN: 0010-4620, 2010, doi:10.1093/comjnl/bxq022.
- [J.27] D. Calisi, A. Farinelli, L. Iocchi, D. Nardi. Multi-Objective Exploration and Search for Autonomous Rescue Robots. *Journal of Field Robotics, special issue on Quantitative Performance Evaluation of Robotic and Intelligent Systems* (**Q2, Computer Science (miscellaneous)**), 24(8-9): pp. 763-777, ISSN:1556-4959, 2007, doi:10.1002/rob.20216.
- [J.28] A. Farinelli, L. Iocchi, D. Nardi, and V. A. Ziparo. Assignment of Dynamically Perceived Tasks by Token Passing in Multirobot systems. *Proceedings of the IEEE, Special issue on Multi-Robot Systems* (**Q1, Electrical and Electronic Engineering**), 94(7): pp. 1271-1288, ISSN:0018-9219, 2006, doi:10.1109/JPROC.2006.876937.

- [J.29] A. Farinelli, L. Iocchi, and D. Nardi. Multirobot systems: A Classification Focused on Coordination. *IEEE Transactions on System Man and Cybernetics, part B (Q2, Computer Science Applications)*, 34(5): pp. 2015–2028, ISSN: 1083-4419, 2004, doi:10.1109/TSMCB.2004.832155.

## Book Chapters

- [B.1] Portugal, D., Iocchi, L., Farinelli, A. A ROS-Based Framework for Simulation and Benchmarking of Multi-robot Patrolling Algorithms. In *Studies in Computational Intelligence*, 778, pp. 3-28, 2019.
- [B.2] A. Farinelli, M. Vinyals, A. Rogers, N. R. Jennings. Chapter 12: Distributed Constraint Handling and Optimization. In *Multiagent Systems*, MIT press, 2013.
- [B.3] A. Rogers, A. Farinelli, N. R. Jennings. Self-organising Sensors for Wide Area Surveillance Using the Max-sum Algorithm. In *LNCS 6090 Lecture Notes in Computer Science. Self-Organizing Architectures*, pp. 84-100, Springer, 2010.
- [B.4] A. Farinelli, L. Iocchi, D. Nardi. Monitoring Search and Rescue Operations in Large-Scale Disasters. In *Data Fusion for Situation Monitoring Incident Detection Alert and Response Management*; Shahbazian E., Ragoza G., Valin P. editors. pp. 659-670. ISBN: 1-58603-536-3. Amsterdam: IOS Press (Netherlands), 2005.
- [B.5] A. Farinelli, L. Iocchi, D. Nardi, and F. Patrizi. Task assignment with dynamic token generation. In *Monitoring, Security, and Rescue Techniques in Multiagent Systems, 2004*. Dunin-Keplicz B., Jankowski A., Skowron, A., Szczuka M. editors. pp. 467–478. ISBN: 3-540-23245-1. Springer Berlin, Heidelberg, 2005.
- [B.6] P. Scerri, D. V. Pynadath, N. Schurr, A. Farinelli, S. Gandhe, M. Tambe. Team Oriented Programming and Proxy Agents: The Next Generation. In *Programming Multi-Agent Systems*. Dastani, M. and Dix, J. and El Fallah-Seghrouchni, A. editors. pp. 131–148. ISBN: 978-3-540-22180-7. Springer Berlin, Heidelberg, 2004.

## PhD Thesis

- [T.1] A. Farinelli. *Distributed Task Assignment for Real World Environments*. PhD thesis, Università degli Studi di Roma “La Sapienza” Dipartimento di Informatica e Sistemistica “Antonio Ruberti”, 2004.

## International Conferences

- [C.1] Olivato, M., Cotugno, O., Brigato, L., Bloisi, D., Farinelli, A., Iocchi, L. A Comparative Analysis on the use of Autoencoders for Robot Security Anomaly Detection. *Proceedings of the 2019 IEEE/RSJ International*

*Conference on Intelligent Robots and Systems (IROS)*, accepted for publication, 2019.

- [C.2] Aldegheri, S., Bombieri, N., Bloisi, D., Farinelli, A. Data Flow ORB-SLAM for Real-time Performance on Embedded GPU Boards. *Proceedings of the 2019 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, accepted for publication, 2019.
- [C.3] Steccanella, L., Bloisi, D., Blum, J., Farinelli, A. Deep learning waterline detection for low-cost autonomous boats. *Advances in Intelligent Systems and Computing (Proceedings of the 15th International Conference IAS-15)*, 867, pp. 613-625, 2019. **Best paper award nominee**
- [C.4] Sarteà, R., Murari, M., Farinelli, A. Agent Behavioral Analysis Based on Absorbing Markov Chains. *Proceedings of the International Joint Conference on Autonomous Agents and Multiagent Systems, AAMAS*, pp. 647-655. 2019.
- [C.5] Castellini, A., Masillo, F., Sarteà, R., Farinelli, A. eXplainable Modeling (XM): Data Analysis for Intelligent Agents. *Proceedings of the International Joint Conference on Autonomous Agents and Multiagent Systems, AAMAS (Demonstration paper)*, pp. 2342-2344. 2019.
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## International Workshops (with peer review)

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- [W.3] Castellini, A., Beltrame, G., Bicego, M., Bloisi, D., Blum, J., Denitto, M., Farinelli, A. Activity recognition for autonomous water drones based on unsupervised learning methods. In *CEUR Workshop Proceedings*, 2054, pp. 16-21, 2017.
- [W.4] L. Steccanella, A., Farinelli, L., Iocchi, D., Nardi. Coloured Petri Net Plans for cooperative multi-robot systems. In *CEUR Workshop Proceedings*, 1834, pp. 51-55, 2017.
- [W.5] L. Bottarelli, M., Bicego, J., Blum, N., Bombieri, A., Farinelli, L., Veggian. Orienteering-based path selection for mobile sensors. In *CEUR Workshop Proceedings*, 1834, pp. 36-40, 2017.
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- [W.8] J. Parker, A. Farinelli and M. Gini Decentralized allocation of tasks with costs changing over time. In *Second Workshop on Synergies between Multiagent Systems, Machine Learning and Complex Systems (TRI 2015)*, held in conjunction with IJCAI 2015.
- [W.9] Marc Pujol-Gonzalez, Jesus Cerquides, Alessandro Farinelli, Pedro Meseguer and Juan Antonio Rodriguez Aguilar. Binary max-sum for multi-team task allocation in RoboCup Rescue. In *International Joint Workshop on Optimisation in Multi-Agent Systems and Distributed Constraint Reasoning (OPTMAS-DCR 14)*, May 5, 2014, Paris, France.
- [W.10] Filippo Bistaffa, Alessandro Farinelli, Jesús Cerquides, Juan A. Rodríguez-Aguilar and Sarvapali D. Ramchurn. Anytime Coalition Structure Generation on Scale-Free and Community Networks. In *International Joint Workshop on Optimisation in Multi-Agent Systems and Distributed Constraint Reasoning (OPTMAS-DCR 14)*, May 5, 2014, Paris, France.

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- [W.12] M. Vinyals, F. Bistaffa, A. Farinelli, and A. Rogers. Stable coalition formation among energy consumers in the smart grid. Proceedings of the 3rd International Workshop on Agent Technologies for Energy Systems (ATES 2012)
- [W.13] K. Macarthur, M. Vinyals, A. Farinelli, S. Ramchurn, and N. R. Jennings. Decentralised Parallel Machine Scheduling for Multi-Agent Task Allocation. In *Fourth International Workshop on Optimisation in Multi-Agent Systems (OPTMAS 11)*, May 3, 2011, Taipei, Taiwan.
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- [W.21] A. Farinelli, G. Grisetti, L. Iocchi, D. Nardi, and R. Rosati. Generation and execution of partially correct plans in dynamic environments. In *Proc. of 3rd Int. Cognitive Robotics Workshop (COGROB'02)*, Edmonton, Canada, 2002.

## Seminars and Presentations

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### Tutorials

- [T.1] Coordination approaches for teams of mobile robots, two lessons, 3.5 hours in total, offered for the 2019 Advanced Course on AI (ACAI)/ Hellenic Artificial Intelligence Summer School (HAISS), sponsored by EurAI and EETN (Hellenic AI society).
- [T.2] Distributed Constraint Optimization in Multi-Agent Systems Dipartimento di Ingegneria informatica automatica e gestionale Antonio Ruberti, Sapienza Università di Roma. Two lessons, two hours each, PhD course on “Competition and Cooperation in Multi-Agent Systems” course organizers: Stefano Leonardi and Luca Iocchi.
- [T.3] Distributed search and constraint handling two lessons, two hours each, offered for the summer school EASSS 2012 (European Agent Systems Summer School). Tutors: Alessandro Farinelli, Alex Rogers, Meritxell Vinyals. June 2012, Valencia, Spain.
- [T.4] Team Coordination in Multiagent Systems one lesson, two hours, offered for the workshop: Austrian Robotics Workshop. Tutor: Alessandro Farinelli. May 2012, Graz, Austria.
- [T.5] Optimization in Multi Agent Systems Full day tutorial offered at IJCAI 11 (four sessions, two hours each). Tutors: Alessandro Farinelli, Jesús Cerquides, Sarvapali D. Ramchurn, Pedro Meseguer, Juan A. Rodríguez-Aguilar. July 2011, Barcelona, Spain.

### Seminars

- [S.1] Recent advances on optimization approaches for joint decision making in Multi-Agent Systems, Università degli Studi di Padova, Padova, Italy, 2014.
- [S.2] A Graphical Model Approach to Decentralized Coordination for Robotic Agents, Institute for Systems and Robotics (ISR) Lisbon, Portugal, 2012.
- [S.3] Agent Coordination Using the Max-Sum Algorithm, Istituto Italiano di Tecnologia (IIT), Genova, Italy, 2011.
- [S.4] Agent Coordination Using the Max-Sum Algorithm, Università degli Studi di Padova, Padova, Italy, 2011.
- [S.5] Factored Decentralised Coordination of embedded Agents, Università degli studi di Sevilla, Sevilla, Spain, 2010.
- [S.6] Decentralised Coordination Using the Max-Sum Algorithm, University of Southern California (USC), Los Angeles, U.S., 2009.

- [S.7] Decentralised Coordination of Low-Power Embedded Devices Using the Max-Sum Algorithm, Southampton University, Science and Engineering of Natural Systems, Southampton, 2008.
- [S.8] Distributed Coordination for Robotic Agents, University of Birmingham, Artificial Intelligence and Natural Computation Seminar, Birmingham, 2008.
- [S.9] Cooperative Behaviors Using Local Interactions, Università La Sapienza di Roma, Dipartimento di Informatica e Sistemistica, Roma, 2007.
- [S.10] Token Passing approach to Task Assignment, Southampton University, Intelligence, Agents and Multimedia group, Agent seminars, Southampton, 2007.
- [S.11] Design, Development and Evaluation of Coordinated Multi-Robot Systems, Università Federico II, Dipartimento di Scienze Matematiche Fisiche e Naturali, Napoli, 2007.
- [S.12] Tool per il coordinamento di sistemi multi-agente, Selex Sistemi Integrati, Roma, 2007.
- [S.13] Distributed Task Assignment for Real World Environment, Dagstuhl Seminars, Multi-Robot Systems: Perception, Behaviors, Learning, and Action, Dagstuhl, N. 06251,19.06.-23.06.06, 2006.

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## ACTIVITY AS SUPERVISOR

### PhD Students

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|-----------|--|
| 2019-     | Davide Corsi. Thesis subject: "Safe Reinforcement Learning for Robotic Systems". (PhD cycle XXXV).   |
| 2019-     | Adrià Fenoy. Thesis subject: "Machine Learning for Optimization". (PhD cycle XXXV).  |
| 2018-     | Matteo Murari. Thesis subject: "Artificial Intelligence methods for Cyber-Security". (PhD cycle XXXIV).  |
| 2018-     | Enrico Marchesini. Thesis subject: "Reinforcement Learning Approaches for robotic systems". (PhD cycle XXXIV).   |
| 2016-     | Riccardo Sarteà. Thesis subject: "Active Malware Analysis based on reinforcement learning techniques". (PhD cycle XXXII).  |
| 2015-2018 | Lorenzo Bottarelli. Thesis Title: "Optimizing Information Gathering for Environmental Monitoring Applications". (PhD Cycle XXXI). Lorenzo Bottarelli has a research fellow position (AdR) with the Department of Computer Science, University of Verona (start date: October 2018, duration: 12 months). |



- 2014–2017 Masoume M. Raeissi. Thesis Title: "Modeling Supervisory Control in Multi-Robot Applications". (PhD cycle XXX). Masoume Raeissi obtained a position as a temporary researcher at the Intelligent and Autonomous Systems department, CWI (Centrum Wiskunde & Informatica), Amsterdam, The Netherlands (start date: 2018).
- 2013–2015 Filippo Bistaffa. Thesis Title: "Constraint Optimisation Techniques for Real-World Applications". (PhD Cycle XXVIII). Winner of a Marie Curie grant, title: *Collectiveware: Highly-parallel algorithms for collective intelligence* (Grant N. 751608); host institution: *Artificial Intelligence Research Institute (IIA-CSIC)*, start date: 16 June 2017, duration 24 months. The PhD thesis of Filippo Bistaffa was awarded the AIxIA honorable mention in 2017.

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## ACTIVITY AS EDITOR AND REVIEWER

### Editor

- 2019- Associate Editor for JAIR (Journal of Artificial Intelligence Research). JAIR is classified as Q1 for the subject category "Artificial Intelligence" (Scimago<sup>2</sup>).
- 2011 Guest Editor for a special issue of the Journal of Autonomous Agents and Multi-Agent Systems (JAAMAS), Vol. 22(3), 2011. special issue title: Optimization in Multi-Agent Systems. JAAMAS is classified as Q2 for the subject category "Artificial Intelligence" (Scimago<sup>3</sup>).

### Organization of International Conferences and Workshops

- 2019 Area Chair for IEEE MRS (IEEE International Symposium on Multi-robot and Multi-agent Systems), 2019.
- 2019 Senior Programme Committee for the European Conference on Artificial Intelligence (ECAI 2020).
- 2019 Senior Programme Committee for the International Conference on Autonomous Agents and Multi-Agent Systems (AA-MAS 2020), robotics track.
- 2019 Senior Programme Committee for the National Conference on Artificial Intelligence (AAAI 2020).
- 2019 Co-Chair for the International Conference on "Smarter Catchment Monitoring, Cleaner Waters", 2019. Co-chair: Mark Scrimshaw.

<sup>2</sup><https://www.scimagojr.com/>, year 2018 (las one available)

<sup>3</sup><https://www.scimagojr.com/>, year 2011

- 2019 Senior Programme Committee for the International Joint conference on Artificial Intelligence (IJCAI 2019).
- 2018 Senior Programme Committee for the IJCAI-ECAI (International Joint conference on Artificial Intelligence and European Conference on Artificial Intelligence), 2018.
- 2018 Mentor for the Doctoral Symposium at the International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS 2018)
- 2018 Co-organizer for the workshop AIRO-18: Artificial Intelligence and Robotics, co-located with the AIxIA 2018 conference (Associazione Italiana per Intelligenza Artificiale). Co-organizers: Alberto Finzi, Fulvio Mastrogiovanni, Salvatore Anzalone.
- 2018 Co-chair of the demonstration track at the International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS 2018); Co-chair: Iolanda Leite.
- 2017 Senior Programme Committee for the International Joint conference on Artificial Intelligence (IJCAI 2017).
- 2017 Co-organizer for the workshop AIRO-17: Artificial Intelligence and Robotics, co-located with the AIxIA 2017 conference (Associazione Italiana per Intelligenza Artificiale). Co-organizers: Alberto Finzi, Fulvio Mastrogiovanni, Salvatore Anzalone.
- 2017 Co-chair of the robotics track at the International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS 2017); Co-chair: Chris Amato.
- 2016 Senior Programme Committee for the European Conference on Artificial Intelligence (ECAI 2016).
- 2016 Senior Programme Committee for the International Joint conference on Artificial Intelligence (IJCAI 2016).
- 2016 Co-organizer for the workshop AIRO-16: Artificial Intelligence and Robotics, co-located with the AIxIA 2016 conference (Associazione Italiana per Intelligenza Artificiale). Co-organizers: Alberto Finzi, Fulvio Mastrogiovanni.
- 2016 Co-organizer for the workshop ARMS16: Autonomous Robots and Multi-Robot Systems co-located with the International Conference on Autonomous Agents and Multi-Agent systems (AAMAS 16). Co-organizers: G. Kaminka, K. Hindriks, N. Agmon, Manuela Veloso, Maria Gini, Daniele Nardi, Pedro Lima, Erol Sahin.

- 2015 Senior Programme Committee for the International Joint conference on Artificial Intelligence (IJCAI 2015).
- 2015 Co-organizer for the workshop ARMS15: Autonomous Robots and Multi-Robot Systems co-located with the International Conference on Autonomous Agents and Multi-Agent systems (AAMAS 15). Co-organizers: G. Kaminka, K. Hindriks, N. Agmon, Manuela Veloso, Maria Gini, Daniele Nardi, Pedro Lima, Erol Sahin.
- 2015 Co-chair of the robotics track at the International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS 2015); Co-chair: Gal Kaminka.
- 2014 Senior Programme Committee for the International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS 2014).
- 2014 Mentor for the Doctoral Symposium at the International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS 2014)
- 2014 Co-organizer for the workshop ARMS14: Autonomous Robots and Multi-Robot Systems co-located with the International Conference on Autonomous Agents and Multi-Agent systems (AAMAS 14). Co-organizers: G. Kaminka, K. Hindriks, N. Agmon, Manuela Veloso, Maria Gini, Daniele Nardi, Pedro Lima, Erol Sahin.
- 2013 Associate Editor for the International Conference IEEE/RSJ Intelligent Robots and Systems (IROS 2013).
- 2013 Exhibition Chair for the International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS 2013).
- 2013 Co-organizer for the workshop OPTMAS13: Optimisation in Multi-Agent Systems co-located with the International Conference on Autonomous Agents and Multi-Agent systems (AAMAS 13). Co-organizers: J.C. Bueno, J.A. Aguilar-Rodriguez, A. Chapman, S. Ramchurn, M. Vinyals.
- 2013 Co-organizer for the workshop ARMS13: Autonomous Robots and Multi-Robot Systems co-located with the International Conference on Autonomous Agents and Multi-Agent systems (AAMAS 13). Co-organizers: G. Kaminka, K. Hindriks, J. Boerkoel, N. Agmon.
- 2013 Associate Editor for the International Conference IEEE/RSJ Intelligent Robots and Systems (IROS 2013).
- 2012 Co-organizer for the workshop OPTMAS12: Optimisation in Multi-Agent Systems co-located with the International Conference on Autonomous Agents and Multi-Agent systems (AAMAS 12). Co-organizers: J.C. Bueno, J.A. Aguilar-Rodriguez, S. Ramchurn, M. Vinyals.

- 2011 Co-organizer for the workshop OPTMAS11: Optimisation in Multi-Agent Systems co-located with the International Conference on Autonomous Agents and Multi-Agent systems (AAMAS 11). Co-organizers: J.C. Bueno, J.A. Aguilar-Rodriguez, S. Ramchurn.
- 2010 Co-organizer for the workshop OPTMAS10: Optimisation in Multi-Agent Systems co-located with the International Conference on Autonomous Agents and Multi-Agent systems (AAMAS 10). Co-organizers: J.C. Bueno, J.A. Aguilar-Rodriguez, S. Ramchurn.
- 2009 Co-organizer for the workshop OPTMAS09: Optimisation in Multi-Agent Systems co-located with the International Conference on Autonomous Agents and Multi-Agent systems (AAMAS 09). Co-organizers: J.C. Bueno, J.A. Aguilar-Rodriguez, S. Ramchurn.
- 2009 Co-organizer for the workshop ADAPT: Agent Design: Advancing from Theory to Practice co-located with the International Conference on Autonomous Agents and Multi-Agent systems (AAMAS 09). Co-organizers: N. Schurr, R. Maheswaran,
- 2006–2007 Member of the technical committee for the organization of the RoboCup Rescue Virtual Robot competitions

## Programme committee and reviewer

- **Programme Committee member for the following international conferences**
  - Autonomous Agent and Multi Agent Systems (AAMAS 2008, 2009, 2010, 2011, 2012, 2013);
  - International Joint Conference on artificial Intelligence (IJCAI 2011, 2013);
  - National Conference on Artificial Intelligence (AAAI 2010, 2012, 2013, 2014, 2017, 2018, 2019);
  - IEEE International Symposium on Safety, Security, and Rescue Robotics (SSRR 2008, 2009, 2010, 2011, 2012, 2013).
  - European Conference on Artificial Intelligence (ECAI 2014)
  - Intelligent Autonomous Systems (IAS 2013, 2014, 2018)
  - ACM Symposium on Applied Computing (ACM-SAC 2018, 2019, 2020)
- **Reviewer for international journals**
  - Artificial Intelligence Journal;
  - International Journal of Artificial Intelligence Research;

- International Journal of Autonomous Agents and Multi-Agent Systems;
  - IEEE transaction on System, Man and Cybernetics (part A,C);
  - International Journal on Multi-Sensor, Multi-Source Information Fusion;
  - AI Communications;
  - Expert Systems;
  - Advances in Complex Systems;
  - IEEE Transactions on Robotics;
  - Computer Journal.
- Reviewer for several international conferences and workshops (e.g., AAMAS, IJCAI, AAI, IROS, ICRA).

### **Expert evaluator for research projects**

- Netherlands Organisation for Scientific Research (NWO)
- Israel Science Foundation