Autonomous Robots

~Special Issue Call for Papers~

Multi-Robot and Multi-Agent Systems

GUEST EDITORS:

The special issue will be edited by the Junior Conference Chair and Editorial Board Editor-in-Chief, and the Program Chairs of the IEEE International Symposium on Multi-Robot and Multi-Agent Systems (MRS):

Nora Ayanian, University of Southern California, USA (ayanian@usc.edu)
Paolo Robuffo Giordano, IRISA-CNRS, France (prg@irisa.fr)
Robert Fitch, University of Technology Sydney, Australia (rfitch@acfr.usyd.edu.au)
Antonio Franchi, LAAS-CNRS, France (antonio.franchi@laas.fr)
Lorenzo Sabattini, University of Modena and Reggio Emilia, Italy (lorenzo.sabattini@unimore.it)

Autonomous Robots invites papers for a special issue on **Multi-Robot and Multi-Agent Systems**.

BACKGROUND ON THE SYMPOSIUM

The International Symposium on Multi-Robot and Multi-Agent Systems is a new initiative of the IEEE RAS Technical Committee on Multi-Robot Systems. The goal of the conference is to bring together researchers who are in the field of multi-robot systems (MRS) and multi-agent systems (MAS), both directly and indirectly, to cross-fertilize ideas. Typically MRS/MAS research is spread across large conferences, so the intent of IEEE-MRS is to bring those researchers together with a high-quality symposium to highlight the best in the field.

SCOPE

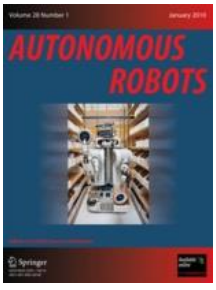
In the same way that computers have revolutionized the way we deal with information, robotics will enable a similar revolution in the way we operate in the real world. Future robots will form a backbone of pervasive, efficient networks oftaskable agents|but, crucially, these will be systems of communicating, cooperative devices. Already multiple robot and multiple agent systems (MRS/MAS) have shown their worth in fairly structured and semi-structured domains such as logistics, cargo management, and agriculture. And far more is on the immediate horizon: vehicular networks for transportation, security and surveillance, food supply, environmental monitoring and ecological impact assessment, services for manufacturing and assistance in rescue settings.

This special issue aims at attracting and presenting contributions that describe the state-of-the-art distributed robotics and multi-agent systems research as applicable to autonomous robot systems. We are soliciting contributions concerned with algorithms, control, estimation, planning, scheduling, architectures, and novel applications. Topics of interest include:

- Modeling and Control of MRS/MAS
- Optimal Control and Optimization Methods for MRS/MAS
- Bio-Inspired MRS and Swarm Intelligence/Robotics
- Distributed Perception and Estimation in MRS/MAS
- Planning and Decision Making for MRS/MAS

PAPER SUBMISSION:

- Authors are encouraged to submit high-quality, original work that has neither appeared in, nor is under consideration by, other journals.
- All papers will be reviewed following standard reviewing procedures for the Journal.
- Papers must be prepared in accordance with the Journal guidelines: **www.springer.com/10514**
  - Submit manuscripts to: **http://AURO.edmgr.com.** Choose **"Multi-Robot and Multi-Agent Systems"** as the article type.



Autonomous Robots **www.springer.com/10514**
Gaurav Sukhatme, Editor-in-Chief
Published by Springer.

- Physical Interaction in/with MRS/MAS
- Cooperative/Collective Learning in MRS/MAS
- AI of Large Scale Systems
- Applications of MRS
- Technological and Methodological Issues
- MRS for Cooperative Manipulation
- Micro/Nano Scale MRS
- Communication in MRS/MAS
- Performance Evaluation and Benchmarking in MRS/MAS
- Human-robot and Human-agent interaction
- Game theoretic approaches for MAS/MRS
- Teamwork, team formation, teamwork analysis for robots

IMPORTANT DATES:

- **Paper submission: March 15, 2018**
- **First reviews completed: June 15, 2018**
- **Revised papers due: August 15, 2018**
- **Final decision: October 30, 2018**
- **Final manuscripts due: November 31, 2018**

GUEST EDITOR BIOS:

Dr. Nora Ayanian

Nora Ayanian is a Gabilan Assistant Professor of Computer Science at University of Southern California. She received the M.S. (2008) and Ph.D. (2011) degrees in Mechanical Engineering from the University of Pennsylvania. Her research focuses on creating end-to-end solutions for coordinating teams of robots that start from truly high-level specifications and deliver code for individual robots in the team, such as using simple multitouch inputs to control a team of UAVs. Ayanian brings a unique approach to multirobot systems, creating unified solutions that address task assignment, path planning, and control that are broadly applicable across all aspects of multirobot systems and mobile sensor networks. Her solutions provide guarantees of convergence and safety on real robotic systems. She is the recipient of an NSF CAREER Award, Okawa Foundation research award, Best paper in the robotics track at ICAPS, and Best Student Paper Award at ICRA 2008. The translational impact of her research and her thought leadership has been recognized by being named to the 2016 MIT Technology Review Top 35 Innovators under 35 (TR35), IEEE Intelligent Systems “AI's 10 to watch” (2013), Mic.com's Mic 50 (2015), and NerdScholar's “40 Under 40: Professors who Inspire” (2014). Ayanian is a co-founder and current co-chair of the IEEE Robotics and Automation Society Technical Committee on Multi-Robot Systems.

Dr. Paolo Robuffo Giordano

Paolo Robuffo Giordano is a CNRS Research Director (DR2) in the Lagadic group in Rennes, France. He holds a PhD degree in Systems Engineering obtained in 2008 at the University of Rome “La Sapienza”. From January 2007 to July 2007 and from November 2007 to October 2008 he was a research scientist at the Institute of Robotics and Mechatronics, German Aerospace Center (DLR), Germany, and from October 2008 to November 2012 he was a senior research scientist at the Max Planck Institute for Biological Cybernetics and scientific leader of the group “Human-Robot Interaction". His scientific interests include motion control for mobile robots and mobile manipulators, visual control of robots, 3D structure estimation from motion, bilateral teleoperation, multi-robot estimation and control, aerial robotics. He has published about 100 papers in international journals and conferences. In 2008 he was awarded with the “Best 2008 PhD Thesis in Robotics and Automatic Control” in Italy. He has been Associate Editor of the IEEE Transactions on Robotics during 2012/2016, Area Chair for RSS in 2014 and 2015m and Associated Editor for all editions of ICRA since 2012.

Dr. Robert Fitch

Robert Fitch is an Associate Professor at The University of Technology Sydney, Australia. Previously, he was a Senior Research Fellow with the Australian Centre for Field Robotics (ACFR) at The University of Sydney. He received his PhD in computer science from Dartmouth College, USA, in 2005. He has led research in planning and collaborative decision-making for both ground and aerial robots in a variety of government and industry sponsored projects including those in broad-acre agriculture, horticulture, bird tracking, and commercial aviation. He is co-chair of the IEEE RAS Technical Committee on Multi-Robot Systems, has led workshops at RSS and other conferences, has served as guest editor for Autonomous Robots and the Journal of Robotics and Autonomous Systems, and has served as Associate Editor for ICRA and IROS.

Dr. Antonio Franchi

Antonio Franchi is a permanent CNRS Researcher in the RIS team at LAAS-CNRS, Toulouse, France. He received the Ph.D. degree in System Engineering from the Sapienza University of Rome, Italy, in 2010, and the Habilitation (HDR) in 2016 from the National Polytechnic Institute of Toulouse, France. In 2009 he was a Visiting Scholar at the University of California at Santa Barbara. From 2010 to 2014 he was first Research Scientist and then Senior Research Scientist and the Project Leader of the Autonomous Robotics and Human-Machine Systems group at the Max Planck Institute for Biological Cybernetics in Tübingen, Germany.

His main research interests are on autonomous systems, with a special regard to robot control and estimation, in particular for multiple-robot systems and aerial robotics. He published more than 90 papers in peer-reviewed international journals and conferences.

In 2010 he was awarded the IEEE RAS ICYA Best Paper Award. He has been an IEEE Senior Member since April 2016. He is an Associate Editor of the IEEE Transaction on Robotics since 2016. He is the co-founder of the IEEE RAS Technical Committee on Multiple Robot Systems and of the International Symposium on Multirobot and Multi-Agent Systems.

From 2013 till 2016 he was Associate Editor of the IEEE Robotics & Automation Magazine and of the IEEE Aerospace and Electronic Systems Magazine in 2015. He has served as associate editor for the 2014, 2015, 2016, and 2017 IEEE ICRA and for the 2014, 2015, 2016, and 2017 IEEE IROS. He co-organized workshops on Multiplerobot Systems, Aerial Robots, and Teleoperation at IEEE 2012, 2013, 2014, and 2016 ICRA, 2014 IROS, and RSS 2015. He was co-organizer of the IEEE-RAS-sponsored 2016 Summer School on Multiple Robot Systems at NUS, Singapore.

Dr. Lorenzo Sabattini

Lorenzo Sabattini is an Assistant Professor at the Department of Sciences and Methods for Engineering, University of Modena and Reggio Emilia, Italy (since 2012). He 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 was a Visiting Researcher at the University of Maryland, College Park, MD (USA). In 2012 he was a Postdoctoral Researcher at the University of Modena and Reggio Emilia. His main research interests include multi-robot systems, decentralized estimation and control, and mobile robotics. He is one of the founding cochairs of the IEEE RAS Technical Committee on Multi-Robot Systems: he has served as the corresponding co-chair since its foundation, in 2014. Lorenzo 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. Since 2014, he has been appointed as Associate Editor for InTech IJARS (Topic: Mobile Robots and Multi-Robot Systems). Since 2015, he has been appointed as Associate Editor for the IEEE Robotics and Automation Letters (RA-L). He has been serving as Associate Editor for IEEE ICRA 2015 and 2016, and IEEE/RSJ IROS 2015. He is member of the Program Committee of the IRMAS track of ACM/SIGAPP SAC 2015 and 2016, and of RSS 2015. He co-organized workshops on Multi-Robot Systems at IEEE ICRA 2013, ICRA 2014, IROS 2014, RSS 2015, IROS 2015 and a workshop on Robotics and Logistics at ERF 2014.