



ICAS 2020

The Sixteenth International Conference on Autonomic and Autonomous Systems

September 27th – October 1st, 2020

ICAS 2020 Editors

Roy Sterritt, Ulster University, UK

Mark J. Balas, Texas A&M University, USA

Timothy Patten, TU Wien, Austria

Geraldo Silveira, Division of Robotics and Computer Vision, CTI, Brazil

Giulia De Masi - Zayed University, UAE

Eliseo Ferrante, Vrije Universiteit Amsterdam, the Netherlands

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2020) by International Academy, Research, and Industry Association (IARIA)
Please refer to the Copyright Information page.

Printed with permission by Curran Associates, Inc. (2020)

International Academy, Research, and Industry Association (IARIA)
412 Derby Way
Wilmington, DE 19810

Phone: (408) 893-6407
Fax: (408) 527-6351

petre@iaria.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

Table of Contents

A Human-on-the-Loop Autonomy Architecture for Resident-AUV Undersea Support Infrastructure <i>Pedro Forero, LorRaine Duffy, and Eric Hendricks</i>	1
Deep Learning Workload Analysis for Efficient Resource Allocation <i>Sayaka Takayama, Takashi Shiraishi, Shigeto Suzuki, Masao Yamamoto, Yukihiro Watanabe, and Masato Oguchi</i>	8
Contingent Planning Using Counter-Examples from a Conformant Planner <i>Sebastien Piedade, Alban Grastien, Charles Lesire, and Guillaume Infantes</i>	16
On Metabolic Complex Networks for Entropic Robust Autonomy <i>Chris Nowak and Darryn Reid</i>	23
Novel Modular Self-Reconfigurable Robot for Pipe and Plant Inspection <i>Sergio Leggieri, Carlo Canali, Ferdinando Cannella, and Darwin Caldwell</i>	36
A Novel System for Grasping and Handling Flat and Deformable Objects <i>Claudio Gloriani, Isiah Zaplana, Ferdinando Cannella, Mariapaola D'Imperio, and Emanuela Cepolina</i>	41
Integration of Landmark Detection and Low-cost Sensors for Vehicle Localization in Challenging Environments <i>Yu Hsiang Wang, Jyh Ching Juang, and Muhammad Rony Hidayatullah</i>	45
Achieving Trustworthy Autonomous Systems through Autonomic and Apoptotic Computing <i>Roy Sterritt</i>	53
Reduction of Decoherence in Quantum Information Systems Using Direct Adaptive Control of Infinite Dimensional Systems <i>Mark Balas</i>	59
Data-Assisted Distributed Stabilization of Interconnected Linear Multiagent Systems without Persistency of Excitation <i>Vahid Rezaei and Margareta Stefanovic</i>	66
Projection-Based Inter-Agent Collision Avoidance in Dual Agent Systems <i>Vinod Gehlot, Mark Balas, Saptarshi Bandyopadhyay, Marco Quadrelli, and David Bayard</i>	72
Area Inspection by Robot Swarms Through Exploitation of Information Gain <i>Carlos Carbone, Dario Albani, Daniele Nardi, Dimitri Ognibene, and Vito Trianni</i>	78
Imitating Task-oriented Grasps from Human Demonstrations with a Low-DoF Gripper <i>Timothy Patten and Markus Vincze</i>	80

Semantic Segmentation for the Estimation of Plant and Soil Parameters on Agricultural Machines <i>Peter Riegler-Nurscher, Johann Prankl, and Markus Vincze</i>	87
Computation of Suitable Grasp Pose for Usage of Objects Based on Predefined Training and Real-time Pose Estimation <i>Muhammed Tawfiq Chowdhury, Shuvo Kumar Paul, Monica Nicolescu, Mircea Nicolescu, David Feil-Seifer, and Sergiu Dascalu</i>	91
Reference Detection for Off-road Self-Driving Vehicles Using Deep Learning <i>Marcelo Pederiva and Ely de Paiva</i>	97
In the Depths of Hyponymy: A Step Towards Lifelong Learning <i>Tommaso Boccato, Timothy Patten, Markus Vincze, and Stefano Ghidoni</i>	103
Towards a Unified Approach to Homography Estimation Using Image Features and Pixel Intensities <i>Lucas A. C. O. Nogueira, Ely C. Paiva, and Geraldo Silveira</i>	110