

2018 IEEE 12th International Conference on Self-Adaptive and Self-Organizing Systems (SASO 2018)

**Trento, Italy
3 – 7 September 2018**



**IEEE Catalog Number: CFP18SAO-POD
ISBN: 978-1-5386-5173-5**

**Copyright © 2018 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

| | |
|-------------------------|-------------------|
| IEEE Catalog Number: | CFP18SAO-POD |
| ISBN (Print-On-Demand): | 978-1-5386-5173-5 |
| ISBN (Online): | 978-1-5386-5172-8 |
| ISSN: | 1949-3673 |

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
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

2018 IEEE 12th International Conference on Self-Adaptive and Self- Organizing Systems **SASO 2018**

Table of Contents

| | |
|---|-------|
| Message from the SASO 2018 General Chairs | .viii |
| Message from the SASO 2018 Program Committee Chairs | .x |
| SASO 2018 Steering Committee | .xii |
| SASO 2018 Organizing Committee | .xiii |
| SASO 2018 Reviewers | .xv |
| SASO 2018 Subreviewers | .xvii |

Social Systems

| | |
|--|-----|
| Disobedience as a Mechanism of Change | .1 |
| <i>David Burth Kurka (Imperial College London), Jeremy Pitt (Imperial College London), Peter R. Lewis (Aston University), Alina Patelli (Aston University), and Anikó Ekárt (Aston University)</i> | |
| Do Social Norms Emerge? The Evolution of Agents' Decisions with the Awareness of Social Values under Iterated Prisoner's Dilemma | .11 |
| <i>Shuyue Hu (Chinese University of Hong Kong) and Ho-fung Leung (Chinese University of Hong Kong)</i> | |
| Democracy by Design: Basic Democracy and the Self-Organisation of Collective Governance | .20 |
| <i>Jeremy Pitt (Imperial College London) and Josiah Ober (Stanford University)</i> | |

Clouds and Communities

| | |
|--|-----|
| A Multi-Agent Elasticity Management Based on Multi-Tenant Debt Exchanges | .30 |
| <i>Carlos Mera-Gómez (ESPOL Polytechnic University), Francisco Ramírez (University of Birmingham), Rami Bahsoon (University of Birmingham), and Rajkumar Buyya (University of Melbourne)</i> | |
| Forecasting Models for Self-Adaptive Cloud Applications: A Comparative Study | .40 |
| <i>Vladimir Podolskiy (Technical University of Munich), Anshul Jindal (Technical University of Munich), Michael Gerndt (Technical University of Munich), and Yury Oleynik (Instana GmbH)</i> | |
| This One Simple Trick Disrupts Digital Communities | .50 |
| <i>Philip Feldman (ASRC Federal), Aaron Dant (ASRC Federal), and Wayne Lutters (University of Maryland, Baltimore County)</i> | |

Metrics and Behavior

- A Macro-Level Order Metric for Self-Organizing Adaptive Systems .60.....
*David King (Air Force Institute of Technology) and Gilbert Peterson
(Air Force Institute of Technology)*
- A Self-Organized Learning Model for Anomalies Detection: Application to Elderly People .70.....
*Nicolas Verstaevael (University of Wollongong), Jean-Pierre Georgé
(University of Toulouse), Carole Bernon (University of Toulouse), and
Marie-Pierre Gleizes (University of Toulouse)*
- Risk-Based Testing of Self-Adaptive Systems Using Run-Time Predictions .80.....
*André Reichstaller (University of Augsburg) and Alexander Knapp
(University of Augsburg)*

Teams and Swarms

- Goal-Aware Team Affiliation in Collectives of Autonomous Robots .90.....
Lukas Esterle (Aston University)
- Optimizing Transitions between Abstract ABM Demonstrations .100.....
*Brian Seipp (University of Maryland, Baltimore County), Karan Budhraj
(University of Maryland, Baltimore County), and Tim Oates (University
of Maryland, Baltimore County)*
- Self-Organized Resource Allocation for Reconfigurable Robot Ensembles .110.....
*Julian Hanke (Institute for Software and Systems Engineering), Oliver
Kosak (Institute for Software and Systems Engineering), Alexander
Schiendorfer (Institute for Software and Systems Engineering), and
Wolfgang Reif (Institute for Software and Systems Engineering)*

Smart Environments

- PINCH: Self-Organized Context Neighborhoods for Smart Environments .120.....
*Chenguang Liu (University of Texas at Austin), Christine Julien
(University of Texas at Austin), and Amy Lynn Murphy (Fondazione Bruno
Kessler)*
- A QoS-Aware Adaptive Mobility Handling Approach for LoRa-Based IoT Systems .130.....
Berrevoets Robbe (KU Leuven) and Weyns Danny (KU Leuven)
- Reins-MAC: Firefly Inspired Communication Scheduling for Reliable Low-Power Wireless .140...
*Matteo Ceriotti (University of Duisburg-Essen, Germany) and Amy L.
Murphy (Bruno Kessler Foundation, Italy)*

Short Papers

- Adaptive Autonomy in a Search and Rescue Scenario .150.....
*Mirgita Frasheri (Mälardalen University), Baran Cürüklü (Mälardalen
University), Mikael Esktröm (Mälardalen University), and Alessandro
Vittorio Papadopoulos (Mälardalen University)*
- Towards Generic Adaptive Monitoring .156.....
*Thomas Brand (University of Potsdam) and Holger Giese (University of
Potsdam)*

| | |
|--|--|
| Implementing Feedback for Programming by Demonstration .162..... | |
| <i>Karan Kumar Budhraja (University of Maryland, Baltimore County) and</i> | |
| <i>Tim Oates (University of Maryland, Baltimore County)</i> | |
| Mitigating Garbage Collection Interference on Containerized Clouds .168..... | |
| <i>Panagiotis Patros (University of New Brunswick), Kenneth B. Kent</i> | |
| <i>(University of New Brunswick), and Michael Dawson (IBM Runtimes)</i> | |
| Self-Adaptation of Coordination in Imperfectly Known Task Environments .174..... | |
| <i>Friederike Wall (Alpen-Adria-Universitaet Klagenfurt)</i> | |
| Self-Adaptation Strategies to Maintain Security Assurance Cases .180..... | |
| <i>Sharmin Jahan (University of Tulsa), Allen Marshall (University of</i> | |
| <i>Tulsa), and Rose Gamble (University of Tulsa)</i> | |
| Author Index .187 | |