

# **2020 2nd International Conference on Societal Automation (SA 2021)**

**Virtual Conference  
26 – 28 May 2021**



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# Conference Program

Day 1 – May 26	
09:00 - 09:30	Opening Ceremony
09:30 - 10:30	<p><b>Keynote 1</b> <b>Marta Kwiatkowska</b> <i>Oxford University, UK</i></p> <p><b>Advances and Challenges in Quantitative Verification for Adaptive Systems</b></p> <p><i>Session Chair</i> Tomasz Szmuc, AGH University of Science &amp; Technology, Poland</p>
10:30 - 11:00	Break
11:00 - 12:00	<p><b>Panel 1</b> <b>Design of Large Scale Ultra Complex Systems</b></p> <p><b>Organizers</b> John S. Baras, University of Maryland, College Park, USA Marta Kwiatkowska, University of Oxford, UK Bashar Nuseibeh, The Open University, UK, and Lero, Ireland Clifford Whitcomb, Naval Postgraduate School, US Tomasz Szmuc, AGH University of Science &amp; Technology, Poland Richard Zurawski, ISAG, USA</p> <p><b>Moderator</b> Tomasz Szmuc, AGH University of Science &amp; Technology, Poland</p> <p><b>Panelists</b> Marta Kwiatkowska, University of Oxford, UK Bashar Nuseibeh, The Open University, UK, and Lero, Ireland</p>
12:00 - 14:00	Lunch
14:00 - 15:00	<p><b>Keynote 2</b> <b>Luis Cabral</b> <i>New York University, USA</i></p> <p><b>The (Ongoing) Digital Revolution: An Economics Perspective</b></p> <p><i>Session Chair</i> Ricardo Cabral, University of Lisbon, Portugal</p>
15:00 - 16:00	<p><b>Panel 2</b> <b>Economics of the Future of Work and Cities</b></p> <p><b>Organizer and Moderator</b> Ricardo Cabral, University of Lisbon, Portugal</p>

	<p><b>Panelists</b>  Luis Cabral, New York University, USA  Alberto L. Sangiovanni-Vincentelli, University of California at Berkeley, USA</p>
16:00 - 16:30	Break
16:30 - 18:00	<p><b>Session S1 (T11)</b>  <b>Socio-Technological Aspects of Societal Automation</b>  Session Chair: John S. Baras, University of Maryland, College Park, USA</p> <p><b><i>A Blockchain-based Supply Chain Tracing to Empower The Swiss Dairy Value Chain.....1</i></b>  Sina Rafati Niya, Danijel Dordevic, Markus Hurschler, Sarah Grossenbacher and Burkhard Stiller</p> <p><b><i>Human Control of Self-Organizing Safety Systems.....9</i></b>  Dieter Etz and Wolfgang Kastner</p> <p><b><i>WIP Enhancing Social Events with Smart Collaborative Environments.....16</i></b>  Catarina Silva, Tiago Ramalho and João Paulo Barraca</p>
16:30 - 18:00	<p><b>Session S2 (T4)</b>  <b>AI, Machine &amp; Deep Learning in Societal Automation</b>  Session Chair:  Krystian Jobczyk, AGH University of Science &amp; Technology, Poland</p> <p><b><i>WIP Using ML to increase the efficiency of solar energy usage in HVAC.....20</i></b>  Emre Kilinç, Sofia Fernandes, Mário Antunes, Diogo Gomes and Rui Aguiar</p> <p><b><i>WIP Toward gesture recognition in robot-assisted surgical procedures.....24</i></b>  Hoangminh Huynhnguyen and Ugo Buy</p>
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Day 2 – May 27

<p>08:00 - 09:30</p>	<p><b>Session S4 (T5)</b>  <b>Sensors in Societal Automation</b>            Session Chairs:            Jörg Gebhardt, ABB Corporate Research, Germany            Tizian Schneider, University of Saarbrücken and ZEMA gGmbH, Germany</p> <p><b><i>Sensor Use Cases in the Context of Industry 4.0.....44</i></b>            Guruprasad Sosale and Joerg Gebhardt</p> <p><b><i>Foucault's currents based position sensor.....49</i></b>            Paulo Santos, Luís Vale, João Carvalho, Jorge Cabral, and D. Araújo</p>
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<p>10:00 - 11:00</p>	<p><b>Panel 3</b>  <b>Blockchain and Cybersecurity</b></p> <p><b>Organizers</b>            Martin Gilje Jatun, SINTEF, Norway            Chunming Rong, University of Stavanger, Norway</p> <p><b>Moderator</b>            Martin Gilje Jatun, SINTEF, Norway</p> <p><b>Panelists</b>            Martin Gilje Jatun, SINTEF, Norway            Ruxandra F. Olimid, University of Bucharest, Romania            Chunming Rong, University of Stavanger, Norway            Roberto Tonielli, University of Cagliari, Italy</p>
<p>11:00 - 12:00</p>	<p><b>Keynote 3</b>  <b>Roman Obermaisser</b>  <i>University of Siegan, Germany</i></p> <p><b>Adaptive Context Dependent Electronic Systems for Autonomous Ground- and Air-transport Systems</b>  <i>Adaptive Time-Triggered Multi-Core Architecture for Context Awareness, Energy-Efficiency and Robustness in Mixed-Criticality Systems</i></p> <p><b>Session Chair</b>            Eric Dekneuve, University of Nice Sophia Antipolis, France</p>

12:30 - 14:00	Lunch
14:00 - 15:00	<p><b>Keynote 4</b>  <b>Alberto L. Sangiovanni-Vincentelli</b>  <i>University of California at Berkeley, USA</i></p> <p><b>The Milano Innovation District (MIND): a living lab for Cities of the future</b></p> <p><i>Session Chair</i>  John S. Baras, University of Maryland at College Park, USA</p>
15:00 - 16:00	<p><b>Keynote 5</b>  <b>Wofgang Kastner</b>  Vienna University of Technology, Austria</p> <p><b>Building Automation Systems Convergence to the Internet of Buildings</b></p> <p><i>Session Chair</i>  Richard Zurawski, ISAG, USA</p>
16:00 - 16:30	Break
16:30 - 17:30	<p><b>Panel 4</b>  <b>Smart Cities &amp; Cities of the Future</b></p> <p><b>Organizer and Moderator</b>  John S. Baras, University of Maryland at College Park, USA</p> <p><b>Panelists</b>  John S. Baras, University of Maryland at College Park, USA  Kenneth Budka, Bell Labs Consulting, USA  Tom Gedeon, Australian National University, Australia  Andrew Karvonen, KTH Royal Institute of Technology, Sweden</p>

Day 3 – May 28

<p>09:00 - 10:30</p>	<p><b>Session 6 (T7)</b>  <b>Session IoT and Cyber-Physical Systems &amp; Applications</b>                  Session Chairs:                  Raimund Kirner, University of Hertfordshire, UK                  Jean-Yves Tigli, University of Nice Sophia Antipolis &amp; I3S, France</p> <p><b><i>Component Interfaces with Loosely Synchronous Communication with Loosely Synchronous Communication.....59</i></b>                  Raimund Kirner, Simon Maurer and Olga Tveretina</p> <p><b><i>Monitoring and Forecasting of Air Emissions with IoT Measuring Stations and a SaaS Cloud Application.....67</i></b>                  Fernando Arévalo N., M. Tahasanul Ibrahim, Rizky M. Diprasetya, Omar Otoniel Flores and Andreas Schwung</p> <p><b><i>Azure RTOS ThreadX Design for Low-End NB-IoT Device.....73</i></b>                  Marcelo Borges, Sofia Paiva, Antonio Santos, Bruno Gaspar and Jorge Cabral</p> <p><b><i>Coverage and Deployment Analysis of NB-IoT Technology under Various Environment Scenarios.....81</i></b>                  Bruno Ferreira, Sofia Paiva, Antonio Santos, Bruno Gaspar and Jorge Cabral</p>
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<p>10:30 - 11:00</p>	<p>Break</p>
<p>11:00 - 12:00</p>	<p><b>Keynote 6</b>  <b>Uwe Brinkschulte</b>  <i>The Goethe University Frankfurt am Main, Germany</i></p> <p><b>The Artificial Hormone System and the Artificial DNA: an Organic Computing approach to handle complex dynamic systems</b></p> <p><i>Session Chair</i>                  Roman Obermaisser, University of Siegen, Germany</p>

12:00 - 14:00	Lunch
14:00 - 15:00	<p><b>Special Presentation 1</b>  <b>Ricardo Cabral</b>  <i>University of Lisbon, Portugal</i></p> <p><b>Money as Technology</b>  <i>Session Chair</i>  <i>Francisco Louçã, ISEG, University of Lisbon, Portugal</i></p>
15:00 - 16:00	<p><b>Special Presentation 2</b>  <b>Joerg Gebhardt</b>  <i>ABB Corporate Research, Germany</i></p> <p><b>Industrial instrumentation: New physical concepts, new use cases and new practice of sensor applications</b>  <i>Session Chair</i>  <i>Tizian Schneider, University of Saarbrücken and ZEMA gGmbH, Germany</i></p>
16:00 - 16:30	Break
16:30 - 17:30	<p><b>Panel 5</b>  <b>Societal Automation – Quo Vadis</b></p> <p><b>Organizer and Moderator</b>  Richard Zurawski, ISAG, USA</p> <p><b>Participants</b>  John S. Baras, University of Maryland, College Park, USA  Ricardo Cabral, University of Lisbon, Portugal  Martin Gilje Jaatun, SINTEF Digital, Norway</p>
17:30 - 17:45	Closing