

Sensors Expo and Conference 2023

Santa Clara, California, USA
20-22 June 2023

ISBN: 979-8-3313-0064-7

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© (2023) by Questex Media Group, Inc.
All rights reserved.

Printed with permission by Curran Associates, Inc. (2024)

For permission requests, please contact Questex Media Group, Inc.
at the address below.

Questex Media Group, Inc.
275 Grove Street, Suite 2-130
Newton, Massachusetts 02466
USA

Phone: (617) 219-8300

info@questex.com

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

3D Printing Enables Complex Manufacturing Processes for Sensors	1
<i>Doug Sparks</i>	
Additive Hybrid Electronics for Novel Wearable Devices	17
<i>Patricia Beck, Robert Malakhov, Jeff Bergman</i>	
E-Textile Based Systems for Damage Detection and Status Monitoring for Military and Other Applications.....	31
<i>Sean Garbarino</i>	
Printed/Flexible/Stretchable and Functional Fabric/E-Textile Sensors and Sensor-Based Systems: Technology Launchpads to Enable Emerging Applications - Part 1: Introduction and Overview.....	42
<i>Roger H. Grace</i>	
Self-Sustainable Textile Sensor Power Sources Based on Low-Cost Printing Solution.....	65
<i>Ismael Domingos, Joana Tavares, Monica Craciun, Pedro Pinho</i>	
A Gait Lab in a Textile Sensor-Infused Sock.....	76
<i>Maurizio Macagno</i>	
U.S. Army Combat Capabilities Development Command Soldier Center: Sensored Soldier at the Tactical Edge	89
<i>Stephanie Brown</i>	
A Hands-On Introduction to the Zephyr Project RTOS.....	101
<i>Mohammed Billoo</i>	
Modernizing Embedded Software	118
<i>Jacob Beningo</i>	
The Best Defense is Offensive Programming.....	133
<i>Tyler Hoffman</i>	
HaLow in Sensor Networks.....	153
<i>N/A</i>	
Matter Over Wi-Fi Training Session	160
<i>N/A</i>	
Optimization of Energy Storage in IoT Devices.....	181
<i>Mark Gebbia</i>	
Major Research Collaborations Driving Energy Harvesting TRL Progression and Power IoT Ecosystem.....	197
<i>Cristina Rusu, Mike Hayes</i>	
Pre-Conference Symposium 1: Charge Controllers, Who Needs Them? Optimizing MPPT for Energy Harvesting Applications	212
<i>Brad Scandrett</i>	
Pre-Conference Symposium 1: Leveraging Mechanical MEMS Energy Harvesting for IoT Applications.....	220
<i>Bjorn Gojdka</i>	

Vueron: LiDAR Solution Provider for Automotive.....	230
<i>Noah Jang</i>	
Infineon XENSIV™ Sensors: At the Forefront of the Sensorization of Things.....	237
<i>Raj Khattoi</i>	
MEMS Sensors Enable the Sustainable Onlife Era.....	252
<i>Marco Angelici</i>	
Sensors: Saving Lives, Enabling Sustainability	265
<i>Christian Peters</i>	
Solar Power for Indoor Sensor Systems	272
<i>Brad Scandrett</i>	
Ambient Power Enabled IoT Sensing.....	282
<i>Vytas Kezys</i>	
Archimedes Controls A150 and ARCOS IIOT Platform.....	287
<i>Wenli Yu</i>	
Innovative MEMS-Based Thermal Conductivity Sensors for Hydrogen Detection.....	295
<i>Federico Pasquini</i>	
Intelligent Sensing: Past, Present, and Future	300
<i>Mahesh Chowdhary</i>	
Making Sense of Atmospheric Carbon Dioxide Measurements with Low-Cost Sensors.....	310
<i>Tyler Boyle</i>	
Overview of the Promising Applications in the MEMS & Sensors Industry	321
<i>Pierre Delbos</i>	
Intelligent Industrial Edge	332
<i>N/A</i>	
Accurate Soil Moisture Sensing: Accurate Soil Sensing using Changing Magnetic Properties with Moisture	337
<i>Bruce Borden</i>	
Accelerating Sensor Development with Digital Twins.....	343
<i>Leyla Mirmomen, Pirouz Kavehpour</i>	
Grow Sensor Adoption with Standard JavaScript Drivers.....	352
<i>Andy Carle</i>	
IoT and IoB in Safety, Security, and Risk Assessment of Critical Infrastructures.....	360
<i>Ashok Vaseashta</i>	
LVR, a Temperature Independent Alternative to LVDT's in Harsh Environments.....	376
<i>N/A</i>	
Smart Sensor and Actuator Standards and Interoperability for IoT, IIoT & CPS.....	386
<i>Eugene Song</i>	
Explore the Latest Connectivity Innovations for IoT Sensor Applications	402
<i>Tony Garcia</i>	

Central Gateway Operation with the Things Stack and Atsign	410
<i>Colin Constable</i>	
Smart Optical Encoders Accelerate Innovation in Automation and Robotics for Industry 4.0.....	420
<i>Sergey Komarov</i>	
STMicroelectronics SubGHz SoC's Spirit, STM32WL	431
<i>Tim Nakonsut</i>	
AI and Machine Learning: A Must-Have for 5G/6G Wireless Connectivity and Sensor Design	441
<i>N/A</i>	
Accelerating Adoption of IoT Protocols in Industry 4.0.....	450
<i>N/A</i>	
What Does 5G Do for IoT and Wearable Devices?	467
<i>Walt Maclay</i>	
Case Study: Evaluating an Automotive User Interface Design	476
<i>N/A</i>	
Thermal Interface Materials (TIMs) and Their Role in the Automotive Semiconductor Space.....	485
<i>Nikhil Jani</i>	
Charging the Future of IoT	489
<i>Cesar Johnston</i>	
Simplifying Your Design with Hall-Effect Sensors.....	501
<i>N/A</i>	
Cutting the Cords and Batteries from Sensor Networks Strenghtens AI	508
<i>N/A</i>	
Jump Start Your Low-Power IoT Sensors Application Development.....	511
<i>N/A</i>	
Finding Flow: Noninvasive, Wireless, Wearable Fluid Sensing for the Human Body	517
<i>R. Chad Webb</i>	
Sensor Innovations for the Next Generation of Wearables.....	525
<i>Tess Skyrme</i>	

Author Index