

Sensors Expo and Conference 2024

Santa Clara, California, USA
18-20 June 2024

ISBN: 979-8-3313-0065-4

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© (2024) 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

The Future of Electronic Design: AI-Driven Automation	1
<i>N/A</i>	
Pony.ai: Exploring the "End to End" Use of AI in Automotive Software.....	11
<i>N/A</i>	
Achetype AI: Newton, a Foundation Model for Physical AI.....	15
<i>N/A</i>	
North America's Largest Electronics Event for Design Engineers	29
<i>Martin Serrano, Mio Suzuki, Gaia Bellone, Ivan Poupryev</i>	
How Advanced Driver Assistance Systems are Changing the Way We Drive.....	32
<i>Sneha S. Shetiya</i>	
Architectures for Safe Automated Driving	38
<i>Chaitanya Shinde</i>	
Accelerating Automotive AI using Open-Source Technologies	45
<i>Aniket Saha</i>	
Opportunities for Multi-Functional Printed Sensors in Auto Tech	49
<i>Jack Howley</i>	
Future of Automotive HPC - Chiplets	53
<i>Willard Tu</i>	
Lightning Talk: Enabling Edge AI in the Car	59
<i>Rehan Tahir</i>	
Challenges and Opportunities for Printed/Flexible/Stretchable and Functional Fabric/E-Textile Sensors and Sensor-Based Systems: New Platforms to Enable Wearable and IoT Applications	63
<i>Roger H. Grace</i>	
Integration and Interconnects	83
<i>Rob Irwin</i>	
Stretchable Printed Circuits and 3D Printed Ceramics: Innovative Platform Technologies Enable Sensor Creation for Medical Wearable Applications.....	90
<i>Mark Waugh, Nobuyasu Hori, Takumi Okashiro</i>	
All-in-One: Multi-Modal Wearable Sensor Patches for Monitoring Chemistry and Vitals	102
<i>Joseph Wang</i>	
Sensorizing with MEMS: The Latest in Products, Design, and Manufacturing.....	125
<i>N/A</i>	
Challenges in Modeling & Simulation of MEMS	132
<i>N/A</i>	
MEMS & Sensors Steering the Automotive Industry Transformation	150
<i>Pierre Delbos</i>	

X-FAB’s Microsystems from MEMS to Advanced Packaging	163
<i>Stijn Sampermans</i>	
Environmental Sensors: Making Your Home, Building and City Smarter	175
<i>Ryotaro Sakauchi</i>	
Latest Advances in Piezo MEMS and the Route to Rapid Volume Production.....	182
<i>Matteo Fusi</i>	
Unlocking the IoT with TinyML and LoRaWAN.....	192
<i>Rob Lauer, T. J. VanToll</i>	
Embedded Rust for C Programmers.....	233
<i>Jacob Beningo</i>	
Key Considerations in Designing Low-Power Sensors for IoT Sustainability to Succeed.....	261
<i>Amit Purohit</i>	
Senseable City Lab: Innovation...from 1901 to 2000.....	271
<i>Simone Mora</i>	
Wearable Sensors and Generative AI for Clinical Decision Making.....	292
<i>Dhruv R. Seshadri</i>	
From Point of Care to Point of Need: Leveraging Advanced Sensing Technologies to Enhance Monitoring Performance in Connected Medical Devices.....	301
<i>Mahdi Sadeghi</i>	
IOT and Security: What You Need to Know	307
<i>Steve Kapp</i>	
Voice Unleashed: Transforming IoT with Autonomous, Battery-Powered Recognition.....	311
<i>Chris Rogers, Claudio Filho</i>	
How Open RAN Empowers IoT Deployment & Enablement.....	318
<i>Azita Arvani</i>	
Wireless Sensor Modeling and Analyzing for 5G/6G Applications	323
<i>N/A</i>	
How Next-Generation Beacon Chips Will Enable Secure Identity, Location and Cloud Communication using Bluetooth Low Energy	333
<i>Simon Ford</i>	
Using AI to Unlock Your IoT Infrastructure.....	341
<i>Daniel Fudge</i>	
Edge-Based Multi-Gas Sensors: Anticipated and Unanticipated Advantages Over Last-Century Sensor Designs	349
<i>Radislav A. Potyrailo</i>	
A Year in Review: Exploring the Evolving Landscape of Sensors, Semiconductors and the Electronics Industry.....	361
<i>Aditya Dayal</i>	
CAN-MD®: Sensing Evolved.....	364
<i>N/A</i>	

Design Considerations for Building Heterogeneously Integrated Sensor Devices.....	375
<i>David Fromm</i>	
Enabling Healthy Air in Every Home: Next Generation Miniaturized CO2 Gas Sensors.....	381
<i>Kaitlin Howell</i>	
The 2023 MEMS Industry Commercialization Report Card: Opportunities and Challenges.....	389
<i>Roger H. Grace</i>	
The Future of IR Point Detectors: Smaller, Scalable, No Cooling	402
<i>Gary Spingarn</i>	
Energy Harvesting: Kinetic Solutions	413
<i>N/A</i>	
Solar Energy Harvesting for Maintenance Free Sensor Deployment	418
<i>N/A</i>	
Low-Power Capacitive Sensing Technology for Human Body Sensing Applications	422
<i>Gary Johnson</i>	
Reducing Time-to-Market for Digital Sensors: The Benefits of a Combined Lab and Fab Test System	432
<i>N/A</i>	
Interoperability Testing Methods of Smart Sensors in IoT/IIoT Applications.....	441
<i>Eugene Song</i>	

Author Index