

smartsystemsintegration

16th-18th April 2024 in Hamburg, Germany



CineMaxx Dammtor, Hamburg

April 16th - 18th, 2024

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Conference program – Tuesday, 16th April 2024

Pre-Programme		
09:00 – 12:00	EPoSS Pre-Event <i>Meeting of the EPoSS Working groups</i>	Registration open
12:30 – 13:30	Registration open	
13:30 – 15:00	Opening Session <i>Chaired by Elisabeth Steimetz and Christian Irmscher</i>	
13:30	Opening & Welcome <i>Stefan Finkbeiner, Harald Kuhn, and Holger Kapels</i>	
13:50	Jari Kinaret, Executive Director, Chips Joint Undertaking <i>Chips JU: current and planned activities</i>	
14:15	Lars Reger, Executive Vice President and Chief Technology Officer NXP <i>Smart connected systems – Enabling a World that Anticipates and Automates</i>	
14:40	Q&A	
15:00 – 15:45	Coffee break	
15:45 – 16:30 16:45 – 17:30	Poster & Exhibitor Pitches & Awards 2023 Exhibitor pitches: <i>Chaired by Antonio Lionetto and Thomas Hammer</i> Poster pitches: <i>Chaired by Luis Fonseca and Jean-Philippe Polizzi</i>	
17:30 – 19:30	Poster Session	

Exhibitor pitches

Order	Company / Institution
1	Tohoku University, Micro System Integration Center
2	Credo Technologies
3	Plan Optik AG
4	Verification Technology Germany GmbH
5	Tyndall National Institute
6	SQL-Projekt AG
7	Forschungsfabrik Mikroelektronik Deutschland (FMD)
8	Fraunhofer ENAS
9	Bilal Mahmood Computer Devices TR

Poster pitches

Track	Nr	Presenter	Institution / Company	Title
1	1	Karman Frances Raj George Maria Selvam	Fraunhofer ENAS	PRELIMINARY INVESTIGATION OF USING PERMINEX RESIST FOR LOW TEMPERATURE ADHESIVE BONDING
1	2	Georg Brunnhofer	AVL List GmbH	Proof-of-Concept of a combined Smart Illuminance and Precipitation Sensor
1	3	Paddy French	TU Delft	A lamb wave based liquid sensor for biomedical applications
1	4	Pierre Gasnier	Univ. Grenoble Alpes, CEA-LETI	Magnetolectric Energy Harvester and its Power Management Circuit to Regulate Indoor Air Quality
1	5	Thomas Lisec	Fraunhofer ISIT	Enabling Innovative Smart System Components with Wafer-Level Integrated PowderMEMS Micromagnets
2	6	Frank Henkel	IMST GmbH	Efficient System-aware Development Strategy for Security-relevant Analog Communication IPs in Smart Systems
2	7	Eoin Ahern	Tyndall National Institute	Power Optimization of a Photovoltaic Energy driven Inter-modal Dry Container tracking system via a Simulation Tool
2	8	Stefan Karanovic	AVL List GmbH	FLOW RATE MEASUREMENT SENSOR SYSTEM ENABLED BY ADDITIVE MANUFACTURING OF MAGNETIC MATERIALS
3	9	Alper Şişman, Alperen Yücel	Delft University of Technology (TU Delft) / Netherlands	Saw Based Biosensor for Cell Growth Analysis
3	10	David Araújo	INL - International Iberian Nanotechnology Laboratory	A flexible and low-power IoT controller for agri-food field sensing applications
3	11	Marieke Stapf	TU Bergakademie Freiberg, Institute for Electronic and Sensor Materials	Integration of Lignin Hydrogel on Suspended Gate FET Structures for a New Type of Chemical Sensor
3	11	Christopher Bickmann	Technische Universität Chemnitz	Evaluation of Thin Pd Layers for a Sensor System to Monitoring Anode-Side Hydrogen Concentration in a Fuel Cell
3	12	Alessandra Rinaldi	Tyndall National Institute, University College Cork	Assessing Latency Cascades: Quantify Time-to-Respond Dynamics in Human-Robot Collaboration for Speed and Separation Monitoring
3	13	René Gastmeier	Coderitter GmbH	Development and Testing of a Modular IoT Device for Industrial Condition Monitoring Applications
3	14	Marc Rensing	Tyndall IE	MICRO TRANSFER PRINTING IN SUPPORT OF CHIPLLET OPEN ACCESS SERVICES OFFERED THROUGH EURO PRACTICE
3	15	Mike Hayes	edacentrum GmbH	LONG LIFE POWER PLATFORMS FOR INTERNET OF THINGS
3	16	Mathieu Guerin	IM2NP	EMBEDDED NGD ALGORITHM FOR LOW POWER REAL-TIME SIGNAL ANTICIPATION
5	17	Stefan Bosse	Universität Bremen	Virtualization and Distributed Machine Learning for Material-integrated Embedded Sensor Networks: Mastering the Challenges with a Holistic Principle
5	18	Paul Fourcade	CEA LETI	Autonomous, Connected and AI-embedded Multi-Sensor System for Wildlife Monitoring
5	19	Yousef Alnaser	Fraunhofer ENAS	EFFICIENT IMPLEMENTATION OF THRESHOLD-BASED VNG DEMOSAICING WITH REDUCED CALCULATIONS

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5	20	Ahmed Shaaban	Infineon Technologies AG Munich	RESONATE-AND-FIRE SPIKING NEURONS FOR TARGET DETECTION AND HAND GESTURE RECOGNITION: A HYBRID APPROACH
5	21	Marcus Stiemer, Sven Lange	Fraunhofer ENAS	Enhancing Information Extraction in EMC Measurements through Artificial Intelligence
5	22	Inessa Seifert	VDI-VDE IT, EPoSS e.V.	Towards a roadmap for Edge AI
5	23	LU MINSHAN	Nanyang Technological University	LIDAR-ASSISTED SELF-SUPERVISING RADAR IMAGE ENHANCEMENT MODEL
5	24	Jinsheng Ji	Nanyang Technological University	Towards Robust Partial Discharge Detection and Classification Under Low Signal-to-noise Ratio Environment

Regular Posters

Track	Presenter	Company	Title
1	Mario Gschwandl	Ottronic E-Systems	Towards Digitizing the Harsh Environment by a Novel Robust and Reliable IIoT Sensor-Platform
1	Shaista Andleeb	Fraunhofer ENAS	DESIGN AND MODELING OF MESOSCALE POLYMER BASED ACOUSTIC LENSES FOR MINIATURIZED ULTRASONIC TRANSDUCERS
1	Dominic Richter	Fraunhofer ENAS / TU Chemnitz	Plasma activated bonding of the heterogeneous material combinations LiTaO ₃ /Si and LiTaO ₃ /SiO ₂
1	Didier Floriot	united monolithic semiconductors	SMART3 – A FO-WLP platform for Heterogeneous integration applied to mixed RF Digital Front-End
2	Carsten Brockmann	Fraunhofer-IZM	HARDWARE-SOFTWARE-CODESIGN METHODOLOGY FOR ENERGY EFFICIENT IOT DEVICES
2	Tobias Jäckel	Fraunhofer ENAS / TU Chemnitz	Investigations on low-temperature thermocompression bonding of passivated aluminum for enhanced wafer-level packaging and heterogeneous integration
2	Piotr Kowalczewski	XTPL SA	High-Resolution Additive Manufacturing for Reliable and Sustainable Smart Systems
3	Luca Bongiovanni	Ideas and motion s.r.l.	Smart city pilots
3	Brendan O'Flynn	Tyndall National Institute, University College Cork	SAFETYBOT - SAFETY SYSTEMS FOR COLLABORATIVE ROBOTICS IN INDUSTRY
3	Jorge Velasco	CIDAUT	VEHICLE DETECTION, CLASSIFICATION AND TRACKING IN URBAN ENVIRONMENTS USING COMPUTER VISION
3	Giancarlo Degli Esposti	Orchestra srl	AI on the EDGE for real time monitoring of performance drifting in tool machines
3	Meghana Vishwanatha	Fraunhofer ENAS	Object detection using Capacitive Micromachined Ultrasonic Transducers(CMUTs)
4	Ganix Lasa	Mondragon GOI Eskola Politeknikoa JMA S.Coop	Human-Centered Industry: Integrating Industry 5.0 Principles and Inclusive Design for Sustainable Innovation
5	Edgar Luhulima, Filip Sabo	TU/e University of Technology Eindhoven	MULTIMODAL SENSOR AND IMAGE PROCESSING WITH DIGITAL OSCILLATORY NEURAL NETWORKS

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Conference program – Wednesday, 17th April 2024

09:00 – 10:00	Opening session <i>Chaired by Harald Kuhn and Wolfgang Dettmann</i>		
09:00	Holger Kapels, Institute Director Fraunhofer ISIT (Keynote) <i>Broad silicon based smart sensor systems towards new materials</i>		
09:30	Klaus Beetz, CEO EIT Manufacturing (Keynote) <i>Driving manufacturing industry towards sustainability</i>		
10:00 – 10:30	Coffee break		
10:30 – 12:15	 Session 1 <i>Track 4: International collaboration for smart systems integration: today and tomorrow!</i> Chaired by Elisabeth Steimetz and Luis Fonseca	Session 2 <i>Track 1: MEMS and Micro fluidics</i> Chaired by Han Shao and Matthias Kuehnel	
10:30	Werner Steinhögl, European Commission, Head of Sector (invited)	10:30	Ole Behrmann, Fraunhofer ISIT <i>Organic-free hydrophobic porous protection caps for wafer-level packaging of MEMS environmental sensors</i>
10:45	Terence Gan, Executive Director at Institute of Microelectronics, Singapore (invited)	10:50	James Rohan, Tyndall National Institute & University College Cork <i>Micro Energy Storage for the Internet of Things</i>
11:05	Paul Carey, Director MEMS and Sensors Industry Group (MSIG) SEMI, USA (invited) <i>Market Development in the World of MEMS and Sensors</i>	11:10	Paddy French, TU Delft <i>A Love-Mode Surface Acoustic Wave Based Sensor for Biosensing Applications in Liquid Samples</i>
11:20	Dr. Jörg Frömel, Micro System Integration Center of the Tohoku University <i>Concept and results of hand-on access fab as enabler for commercialization of micro and nano devices</i>	11:30	Emre Can Durmaz IHP GmbH, Leibniz-Institut für innovative Mikroelektronik <i>Advancements in the Cu Pillar based PCB Microfluidic System Integration with SiGe BiCMOS Technology</i>
11:35	Francis Balestra, Director Sinano Institute Horizon Europe ICOS CSA objective & first results: EU strengths, weaknesses, dependences and impact of international collaboration	11:50	Tom Enderlein (Best Paper 2023), Center for Microtechnologies Chemnitz <i>Hollow microneedle fabrication and characterization for interstitial fluid extraction in minimally invasive sensors</i>
11:50	Panel discussion <i>International collaboration for smart systems integration: today and tomorrow!</i>		
12:20 – 13:20	Lunch break		
13:20 – 15:00	 Session 3 <i>Track 4: Smart systems for virtual & augmented reality: state of the art technologies and future needs.</i> Chaired by Elisabeth Steimetz and Paddy French	Session 4 <i>Track 3: Medical, health and automotive application of smart systems</i> Chaired by Matthias Kuehnel and Harald Pötter (tbc.)	
13:20	Anne Bajart, DG CNECT (invited) <i>“Virtual worlds” partnership</i>	13:20	Marco Ottella, Xtremion Technology <i>Towards a made-in-Europe ecosystem for multisport training, healthy lifestyle and remote patient monitoring based on cloud-edge continuum of AI-featured body sensors</i>
13:35	Peter Ostertag, Director Optics Business, Bosch Sensortec (invited) <i>Micro-Optics enabling all-day wearable smart-glasses</i>	13:40	Sajina Tinku, Fraunhofer EMFT <i>High density traces on several meters long film stripes by roll-to-roll digital lithography for medical applications</i>
13:50	Uwe Vogel, Fraunhofer IPMS (invited) <i>Microdisplays for AR/VR/MR: Requirements and Features</i>	14:00	Franz Selbmann, Fraunhofer ENAS <i>Investigation of the Biocompatibility of Parylene-based Encapsulations for Medical Implants</i>
14:05	Ward van der Tempel, CTO Voxelsensors (invited) <i>Low-Power, Low-Latency Perception for XR</i>	14:20	Shanshan Gu-Stoppel, Fraunhofer-ISIT MEMS based smart LIDAR system for human-machine cooperation
14:20	Peter Schelkens, Department of Electronics and Informatics (ETRO), VUB (invited) <i>Optics and Photonics Technologies Serving Virtual Worlds</i>	14:40	Maurizio Tranchero, Ideas and motion <i>Design of a Smart Actuation for a Fully Electrified Suspension System</i>
14:35	Panel discussion <i>„Virtual worlds enabled by smart systems“</i>		
15:00 – 15:30	Coffee break		

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Conference program – Wednesday, 17th April 2024 (continued)

15:30 – 17:10	Session 5 <i>Track 2: Reliability and test of smart systems</i> Chaired by Sven Rzepka and Wolfgang Dettmann	Session 6 <i>Track 3: Smart for Green – energy management and energy harvesting in application spaces</i> Chaired by Thomas Hammer and Han Shao
15:30	Régis Hamelin, Blumorpho (Pack4EU CSA)	Peter Spies, Fraunhofer IIS <i>Green ICT for Green: Energy harvesting powered IoT-sensors</i>
15:50	Jakko Nieuwenkamp Reden B.V. <i>Remaining useful lifetime estimation of electrical component</i>	Kari Mäki, VTT Technical Research Centre of Finland <i>Analysis of economic benefits from load shifting services in energy communities</i>
16:10	Markus Reiter, AVL List GmbH <i>Advancing fuel cell and battery development with fiber optical sensor solutions</i>	Nahas Hassan Annacot, Infineon Dresden <i>Supporting Energy Management using Artificial Intelligence</i>
16:30	Dominik Schröder, Fraunhofer ENAS <i>High precision magnetic field measurement of wafer-level integrated micromagnets using an automated near-field scanner</i>	Alex Rodriguez-Iglesias, Consejo Superior de Investigaciones Científicas (CSIC) <i>Packaged all-silicon based micro-thermoelectric generator</i>
16:50	Alexander May, Michael P. M. Jank, Fraunhofer IISB <i>A 4H-SiC CMOS technology enabling smart sensor integration and circuit operation above 500 °C</i>	Pierre Gasnier, CEA LETI <i>Batteryless piezoelectric sensor system for enhanced ski experience</i>
17:10 – 18:00	Spare time	
18:00	Bus shuttles from CinemaxX Dammtor to Überseebrücke	
18:20	Conference dinner @ MS Louisiana Star Grand harbour tour, networking, buffet and drinks	
20:45 - 21.45	Bus shuttles from Überseebrücke to CinemaxX Dammtor	

Conference program – Thursday, 18th April 2024

09:00 – 10:00	Opening session Chaired by Wolfgang Dettmann and Paddy French	
09:00	Torsten Grawunder, swissbit Germany AG (Keynote) <i>Towards chiplets in harsh environments: challenges from an advanced packaging point of view</i>	
09:30	Thomas Gessner Award <i>Announced during the conference</i>	
10:00 – 10:30	Coffee break	
10:30 – 12:00	Session 7 <i>Track 5: AI of smart systems</i> Chaired by Harald Kuhn and Christoph Koegler	
10:30	Frank Schönefeld, Telekom MMS (Keynote) <i>Technologies in Generative AI and the Future of Coding</i>	
11:00	Prof. Harald Mathis, Fraunhofer application center on AI applications (invited) <i>Event-triggered AI</i>	
11:25	Round table discussion with <i>Inessa Seifert, Frank Schönefeld, Harald Mathis and Marcus Stiemer</i>	
12:00 – 13:15	Lunch break	
13:15 – 14:45	Session 8 <i>Track 2: System and hetero integration</i> Chaired by Jean-Philippe Polizzi and tba.	Session 9 <i>Track 5: Methodological challenges and novel components for AI in smart systems</i> Chaired by Christoph Koegler and Christian Hedayat
13:15	Marko E. Leinonen, University of Oulu, Finland <i>Antenna lens integration challenges with 6G sub-THz radios</i>	Marcus Stiemer, Helmut-Schmidt-University / University of the Federal Armed Forces Hamburg <i>Mitigation of AI-Inherent Risks in AI-Supported Industrial Development and Scientific Research</i>
13:35	Alexander Kaufmann, Infineon Technologies Dresden GmbH & co. KG <i>Monolithically integrated wireless multisensor solution</i>	Diing Shenp Ang, Nanyang Technological University <i>Silicon FET Reservoir for Dynamic Edge Vision</i>
13:55	Sebastian Wicht X-FAB MEMS Foundry GmbH <i>Micro-Transfer-Printing: A Technology for Wafer-Level Packaging in a Foundry Environment</i>	Sarah Seifi, Infineon Technologies AG (Best poster 2023) <i>Bridging the Gap: From Post-Hoc Explanations to Intrinsic Interpretability in Sensor Applications Using Rule-Based Systems</i>
14:15	(retracted)	Danilo Pau, Technical Director, IEEE and ST Fellow, STMicroelectronics <i>Ultra Tiny Neural Networks for Increased Accuracy of Pressure Sensors under Multiple Thermal Stresses</i>
14:45-15:00	Closing session: Best poster and best Paper 2024! Chaired by Kuhn, Harald	
	End of conference	