

2025 Annual Report (June 2024 – May 2025)
Cellular Neural Networks and Memristor Array Computing
Technical Committee/ Special Interest Group
IEEE Circuits and Systems Society

Chairman: András Horváth
Chair-Elect/Secretary: Georgios Sirakoulis

1. Technical Committee/Special Interest Group Meeting(s):

Please provide information on the TC/SIG meetings held in the past year, including date, time, location, attendance rate, and if a quorum was present.

TC meeting on 2024.05.21. at ISCAS conference in Singapore (with virtual attendance) with 23 participants

Virtual TC meeting on 2024.10.18 held online with 17 participants

2. Voting Members:

First Name	Last Name	Affiliation	Email	IEEE Grade	IEEE Region
Ahmet Samil	Demirkol	TU Dresden	ahmet_samil.demirkol@tu-dresden.de		8
Akos	Zarandy	Hungarian academy of Sciences	zarandy@sztaki.hu	Senior Member	8
Alon	Ascoli	TU Dresden	alon.ascoli@tu-dresden.de	Senior Member	8
Alberto	Tesi	University of Florence	alberto.tesi@unifi.it		8
Alex	James	Digital Kerala University	apj@ieee.org	Senior Member	10
Alexander	Serb	University of Southampton	A.Serb@soton.ac.uk		8
András	Horváth	Peter Pazmany University	Horvath.andras@itk.ppke.hu		8
Angela	Slavova	Bulgarian Academy of Sciences	angela.slavova@gmail.com	Fellow	8

Ari	Paasio	Kovilta Ltd.	ari.paasio@kovilta.fi		8
Arturo	Buscarino	University of Catania, Italy	Arturo.buscarino@unict.it	Senior	8
Bernabe	Linares-Barranco	Instituto de microelectronica de seville	bernabe@imse-cnm.csic.es		8
Chai	Wah Wu		chaiwahwu@ieee.org		1
Chi	Tse	City university of Hong Kong	chitse@cityu.edu.hk		10
Christos	Papavassiliou	Imperial college London	ec.papavas@imperial.ac.uk		8
Daniele	Ielmini	Polytechnico di Milano	daniele.ielmini@polimi.it		8
Dimitra	Georgiadou	Univerisy of Southampton	D.Georgiadou@soton.ac.uk		8
Fernando	Corinto	Politecnico di Torino	fernando.corinto@polito.it		8
Georgios	Sirakoulis	Democritus University of Thrace	gsirak@ee.duth.gr		8
Gert	Cauwenberghs	UniversityOf southern California	gcawwenberghs@ucsd.edu		6
Giacomo	Innocenti	Universtiy of Florence	giacomo.innocenti@unifi.it		8
Ioannis	Messarlis	TU Dresden	ioannis.messarlis@tu-dresden.de		8
Johan	Suykens	KU Leuven	johan.suykens@esat.kuleuven.be		8
John Paul	Strachan	Fz Juelich	j.strachan@fz-juelich.de		8
Jorge Fernández	Berni	Universidad de Sevilla	berni@imse-cnm.csic.es		8
Joshua	Yang	Universtiy of Southern California	jjoshuay@usc.edu		6
Kristóf	Karacs	Peter Pazmany University	Karacs.kristof@itk.ppke.hu		8
Leon	Chua	University of Berkeley	lchua2916@gmail.com		6
Luigi	Fortuna	University of Catania, Italy	luigi.fortuna@unict.it	Senior	8
Maciej	Ogorzalek	Jagiellonian University	maciej.ogorzalek@uj.edu.pl		8

Maide	Bucolo	University of Catania, Italy	Maide.bucolo@unict.it	Senior	8
Mattia	Frasca	University of Catania, Italy	mattia.frasca@dieei.unict.it	Senior	8
Mauro	Di Marco	Universita di Siena	dimarco@diism.unisi.it		8
Mauro	Forti	Universita di Siena	forti@dii.unisi.it		8
Mika	Laiho	University of Turku	mlaiho@utu.fi		8
Mohamad	Moner Al Chawa	TU dresden	mohamad_moner.alchawa@tu-dresden.de		8
Mustak Erhan	Yalcin	Technical University of Istanbul	mustak.yalcin@itu.edu.tr		8
Neil T	Kemp	University of Nottingham	Neil.Kemp@nottingham.ac.uk		8
Nerhun	Yildiz	Intel	nerhun.yildiz@intel.com		8
Paolo	Arena	University of Catania	paolo.arena@unict.it		8
Paolo	Civalleri	Politecnico di Torino	pier.civalleri@polito.it		8
Paschalis	Gkoupidenis	Max Planck institut	gkoupidenis@mpip-mainz.mpg.de		8
Peter	Szolgay	Peter Pazmany University	Szolgay.peter@itk.ppke.hu	Senior Member	8
Peng	Zhou	LuxiTech	p.pengzhou@gmail.com		9
Piotr	Dudek	University of Manchester	pdudek@manchester.ac.uk		8
Qiangfei	Xia	University of Massachusetts Amherst	qxia@umass.edu		2
Rainer	Waser	University of Aachen	waser@iwe.rwth-aachen.de		8
Ricardo	Carmona Galán	Instituto de Microelectrónica Sevilla	ricardo.carmona@csic.es	Senior Member	8
Ronald	Tetzlaff	TU Dresden	ronald.tetzlaff@tu-dresden.de	Senior Member	8
Ioannis	Messarís	TU Dresden	ioannis.messarís@tu-dresden.de		8
Mohamad Moner	Al Chawa	TU Dresden	mohamad_moner.alchawa@tu-dresden.de		8
Valeri	Mladenov	Prof.	valerim@tu-sofia.bg	Senior Member	8
Sabri	Arik	Istanbul University-Cerrahpasa	ariks@istanbul.edu.tr		8

Shahar	Kvatinsky	Technion	shahar@ee.technion.ac.il	Senior Member	8
Stephan	Menzel	Forschungszentrum Jülich	st.menzel@fz-juelich.de		8
Stan	Williams	Texas A&M University	stan.williams@tamu.edu		3
Stefan	Slesazeck	NAMLAB	Stefan.Slesazeck@namlab.com		8
Sung-Mo S	teve Kang	University of Southern California	skang@ucsc.edu		6
Lucia Valentina	Gambuzza	University of Catania, Italy	Lucia.gambuzza@dieei.unict.it	Senior	8
Salvina	Gagliano	University of Catania, Italy	salvina.gagliano@unict.it	Senior	8

Geographical distribution of TC/SIG members (percentage of total)

	2024	2024
Total number of TCs	%	
Regions 1 – 6 (U.S.A.)	13	7
Region 7 (Canada)	0	0
Region (Europe/Africa, Middle East)	885	49
Region 9 (Central/South America)	1	1
Region 10 (Asia/Pacific)	2	1

Gender distribution of TC/SIG members (percentage of total)

	2024
Total number of TCs	%
Male	9
Female	10

Distribution of TC/SIG members by affiliation (percentage of total)

	2024
Total number of TCs	%

Academia	90
Industry	10
Government	0

3. Accomplished Technical Activities

3.1. IEEE Conference/Event organizations

(First priority, please highlight conference/events technically and financially co-sponsored by the CAS Society)

Your Name	Conference Sponsors	Conference/Event Title	Your Role
Ricardo Carmona-Galán	IEEE CAS	ICECS 2025	Track Chair
Ricardo Carmona-Galán	IEEE CAS	ISCAS 2025	Track Chair
Alex James	IEEE CAS	MWCAS 2025	Track Chair
Alex James	IEEE CAS	ISCAS 2025	RCM
Alex James	IEEE CAS	ISCAS 2025	International Advisory Member
Alex James	IEEE CAS	ISCAS 2024	RCM
Alex James	IEEE CAS	ISICAS 2024	Plenary session chair
Alex James	IEEE CAS	ISICAS 2025	Technical Co-chair
Gert Cauwenberghs	IEEE CAS and EMB	2024 IEEE Biomedical Circuits and Systems Conference (BioCAS 2024, https://2024.ieee-biocas.org)	International Liaison
Angela Slavova	IEEE CAS	MOCAS 2024	Member of the Program Committee
Stephan Menze	IEEE CAS	ISCAS 2025	Track Co-Chair
Valeri Mladenov	IEEE CAS	MOCAS 2024	General Chair
Vasileios Ntinis	IEEE CASS	IEEE ISCAS 2025	Review Committee Member
Piotr Dudek	IEEE CAS	ISCAS 2025	Demo Sessions Chair

(Second priority, please highlight conference/events technically by the CAS Society)

Your Name	Conference Sponsors	Conference/Event Title	Your Role
Gert Cauwenberghs	Featured as IEEE CASS 75th Anniversary Global Celebration Event	2024 Neuro Inspired Computational Elements (NICE 2024, https://niceworkshop.org/nice-2024/)	General Chair

Prof. Shahar Kvatinsky	IEEE CAS	NAND Storage – Overview, Challenges and Future Outlook	Organizer - IEEE Israel Circuits and Systems chair
Prof. Shahar Kvatinsky	IEEE CAS	Crossbar based Mixed-Signal Neural Architectures under Variability and Parasitics	Organizer - IEEE Israel Circuits and Systems chair
Prof. Shahar Kvatinsky	IEEE CAS	Power Management Techniques for Secure Integrated Circuit Design	Organizer - IEEE Israel Circuits and Systems chair
Prof. Shahar Kvatinsky	IEEE CAS	Efficient Hardware Implementation of Deep Learning Computation and its Application	Organizer - IEEE Israel Circuits and Systems chair
Prof. Shahar Kvatinsky	IEEE CAS	Batteries not Included: Circuits and Systems that Sense and Self-Power	Organizer - IEEE Israel Circuits and Systems chair
Prof. Shahar Kvatinsky	IEEE CAS	Memory interfaces – past, present and future	Organizer - IEEE Israel Circuits and Systems chair
Prof. Shahar Kvatinsky	IEEE CAS	Digitization and Intelligence: unlocking the innovation of future radios	Organizer - IEEE Israel Circuits and Systems chair
Prof. Shahar Kvatinsky	IEEE CAS	Chiplet Design Overview: Addressing Challenges and the Future Beyond Moore's Law	Organizer - IEEE Israel Circuits and Systems chair
Prof. Shahar Kvatinsky	IEEE CAS	Accelerating Secure Computing for IoT Sensors	Organizer - IEEE Israel Circuits and Systems chair
Vasileios Ntinias	IEEE CASS Germany Chapter	International Conference on Modern Circuits and Systems Technologies (MOCAS)	Special Session Chair, Registration Chair
Vasileios Ntinias	IEEE CASS, IEEE CEDA	International Conference of Synthesis, Modeling, Analysis and Simulation Methods, and Applications to Circuits Design (SMACD)	Program Committee Member

Please don't report conference/events that are NOT sponsored by the CAS Society. Thank you!

3.2. IEEE Journal Editorships:

(Please highlight the journals that are (co-)sponsored by the CAS Society, cf., <https://ieeecas.org/publications>)

Your Name	Journal Sponsors	Journal Title	Your Role
Ricardo Carmona-Galán	IEEE CAS	JETCAS	SEB Member
Ricardo Carmona-Galán	IEEE CAS	TCAS-I	Guest editor
Alex James	IEEE CAS	IEEE Transactions on Biomedical Circuits and Systems	Associate Editor
Alex James	IEEE CAS	IEEE Transactions on Artificial Intelligence Circuits and Systems	Associate Editor
Alex James	IEEE CAS	IEEE Open Journal on Circuits and Systems	Associate Editor in Chief
Alex James	IEEE CAS	IEEE Journal on Selected Topics in Sensors	Guest Editor
Gert Cauwenberghs	IEEE CAS and EMB	IEEE Transactions on Biomedical Circuits and Systems (TBioCAS, https://ieeecas.org/publication/TBioCAS)	Chair and CASS Representative, Steering Committee

Gert Cauwenberghs	IEEE (including CAS)	Proceedings of the IEEE	Editorial Board
Valeri Mladenov	IEEE CAS	Trans. CAS I, Trans. CASII	reviewer
Johan Suykens		action editor Neural Networks	
Johan Suykens		associate editor IEEE Transactions on Artificial Intelligence	

Please don't report journals that are NOT sponsored by the CAS Society. Thank you!

3.3. Awards, Honors, and Recognition

(Fellow, Distinguished Lecturer, Outstanding Service, Best Paper Awards, and so on by the CAS Society)

Your Name	Awards / Honors / Recognition	Period
Alex James	Distinguished Lecturer	2024-2025
Alex James	Guillemin Cauer Best paper award	2024
Gert Cauwenberghs	IEEE Fellow (CASS nominated) 2024 IEEE Neural Networks Pioneer award	2011-present

3.4. Keynote Speeches/Invited Talks:

Your Name	Invited by	Event/Conference Title	Talk Title	Date
Ricardo Carmona-Galán	Universidade de Santiago de Compostela	IEEE CoSeRa	Visual information cues from a CMOS front-end sensor chip	19-SEP-2025
Alex James	IEEE CASS Malaysia	IEEE CASS Malaysia	CASS DL talk	May 2024
Alex James	IEEE CASS Bangalore	IEEE CASS Bangalore	CASS DL talk	Aug 2024
Alex James	IEEE CASS Kerala	IEEE CASS Kerala	CASS DL talk	Nov 2024
Alex James	IEEE CASS Kerala	IEEE CASS Hyderabad	CASS DL talk	Dec 2024
Alex James	CSIR CEERI	CSIR-CEERI workshop on the topic of Post-Silicon Validation	Post-Silicon Validation	March 2025
Alex James	Centre for Nano Science and Engineering (CeNSE) , IISc	CENSE Invited talk	Crossbar-based Mixed-Signal Neural Architectures under Variability and Parasitics.	March 2025

Alex James	VLSI for ALL	VLSI for ALL - Podcast	AI hardware revolution	Feb 2025
Alex James	NITC	Symposium on semiconductor technology	AI hardware	Aug 2024
Alex James	IEEE Kerala section	IEEE Kerala graduate student community travancore hub	Inaugural talk on research in AI circuits	Sep 2024
Alex James	Sahrdaya college	IEEE CASS Kerala	CASS DL talk	Oct 2024
Alex James	GEC Barton Hill	IEEE CASS Kerala	CASS DL talk	Aug 2024
Alex James	Madanapalle Institute of Technology	IEEE CASS Hyderabad	CASS DL talk	Sep 2024
Alex James	Manipal Institute of Technology	IEEE CASS	World of VLSI – introductory lecture on history of CASS	Aug 2024
Alex James	Technion	ACRC Webinar	Crossbar-based Mixed-Signal Neural Architectures under Variability and Parasitics.	July 2024
Alex James	IEEE CEDA	IEEE SWEAT	Low power In memory compute	June 2024
Gert Cauwenberghs	Prof. Andrei Vladimirescu	Keynote, IEEE Int. Symp. Circuits and Systems (ISCAS'2024)	Moore with Less: Ultra-Low Energy Neuromorphic Circuits and Systems for Large-Scale Distributed AI	Singapore, May 20, 2024
Gert Cauwenberghs		Invited Talk, 2024 Int. Conf. Neuromorphic Computing and Engineering (ICNCE)	Silicon and Memristive Integrated Neuromorphic Systems for Engineered Natural Intelligence	Aachen Germany, June 5, 2024
Gert Cauwenberghs		Invited Talk, Forum on Compute-in-Memory, 50th IEEE European Solid-State Electronics Research Conference (ESSERC 2024)	Memristive and Memcapacitive Neuromorphic Compute-in-Memory Arrays for Distributed Parallel AI at Extreme Scale and Efficiency	Bruges, Belgium, Sept. 9, 2024
Angela Slavova	N.Vitanov	NTADES 2024	Physics Informed neural Networks with Memory	July 18, 2024
Angela Slavova	E.Lilkova	BGSIAM 2024	Edge of Chaos in PINN with Memory	December 14, 2024
Prof. Shahar Kvatinsky	Mousum Handique, Assam University	The 3rd IEEE International Conference on Intelligent Systems, Advanced Computing and Communication, Silchar, India, February 2025 (keynote).	Real Digital Processing-in-Memory with the Memristive Memory Processing Unit	February 2025
Prof. Shahar Kvatinsky	Indranil Sengupta, IIT Karghapur	The 33rd IEEE Asian Test Symposium, Ahmedabad, Gujarat, India, December 2024 (invited).	Real Digital Processing-in-Memory with the Memristive Memory Processing Unit	December 2024
Prof. Shahar Kvatinsky	Rhein Parri, Aston University	FENS symposium, Vienna, Austria	On-Device Machine Learning with Memristors in the Neuromorphic Era	June 2024

Stephan Menzel	Forschungszentrum Jülich	Global Conference on Materials in an Explosively Growing Informatics World, CIMTEC 2024, Montecatini Terme, Italy, 2024	Latest advances in modelling of electrochemical resistive switching devices	June 20-24, 2024
Stephan Menzel	Forschungszentrum Jülich	MemrisTec Summer School, University of Groningen, Groningen, Netherlands, 2024.	Switching Dynamics and Variability of ReRAM Devices,	September 23-28, 2024,
Stephan Menzel	Forschungszentrum Jülich	Brazilian Material Research Society Meeting 2024, Santos, Brazil, 2024.	Thermal Aspects of filamentary Switching VCM cells	September 29th-October 3 rd , 2024
Stephan Menzel	Forschungszentrum Jülich	7th International Conference on Memristive Materials, Devices & Systems (Memrisys) 2024, Seoul Korea, 2024.	On the Relation between Switching Kinetics and Analog Programming Capabilities of Memristive Devices based on the Valence Change Mechanism	November 10-13, 2024
Stephan Menzel	Forschungszentrum Jülich	2024 IEEE CASS Seasonal School on "Intelligence in Chips: Memristive Sensing & Bioinspired Computing Systems,	Filamentary Valence Change Memories: The Role of Joule Heating	October 16th-19th, virtual, 2024
Vasileios Ntinias	Georgios Sirakoulis, DUTH, Xanthi, Greece	Invited talk during the course "Complex Systems: Synthesis and Analysis"	Stochastic Resonance on Memristor Devices	May 23, 2025
Vasileios Ntinias	Antonio Calomadre, Antonio Rubio, UPC, Barcelona, Spain	Invited lecture at "Neuromorphic Computing and Emerging Technologies", Catedra CHIP UPC, Barcelona, Spain	Memristor Cellular Nonlinear Networks	June 10, 2025
Johan Suykens		IEEE Neural Networks Pioneer Award Keynote talk: "Least Squares Support Vector Machines and Deep Learning", IEEE World Congress on Computational Intelligence WCCI - IJCNN 2024, Yokohama Japan, July 2024.		
Johan Suykens		Keynote talk at DeLTA 2024 International Conference on Deep Learning Theory and Applications: "New Synergies Between Deep Learning and Kernel Machines", Dijon France, July 2024.		
Piotr Dudek	Prof. Chetan Singh Thakur	Bangalore Neuromorphic Engineering Workshop	"Neuromorphic Vision Sensors: from retina models to in-pixel computing",	08/01/2025
Piotr Dudek	Dr Yussi Yli Ayho	Huawei Future Imaging Workshop, Milan	"On-Sensor Computer Vision with Pixel-Parallel Processor Arrays",	26/10/2024

Piotr Dudek	Prof Yulia Sandamirskaya	Neuromorphic Vision Hackathon, ZHAW Zurich, Wädenswil	“On-Sensor Computer Vision with Pixel-Parallel Processor Arrays”	21/10/2024
-------------	--------------------------	---	--	------------

3.5. Other distinguished IEEE services

(For example, CAS BoG, Region/chapter leadership, TC chair/secretary)

Your Name	Organization	Position/Activities	Period
Ricardo Carmona-Galán	IEEE CAS	Sensory Systems TC Chair	2023-2025
Alex James	IEEE CAS	Chair,	
Gert Cauwenberghs	IEEE Engineering Medicine and Biology Society (EMB)	Vice President of Technical Activities	2024-2025
Gert Cauwenberghs	IEEE Brain Technical Community	Steering Committee	2021-2025
Gert Cauwenberghs	IEEE CAS	Society/Council Fellow Evaluating Committee (S/C-FEC)	2025
Stephan Menzel	Forschungszentrum Jülich	Associate Editor of J-EDA	Since 2021-
Stephan Menzel	Forschungszentrum Jülich	Technical Committee Member of IEEE International Memory Workshop	Since 2024
Valeri Mladenov	TU-Sofia, Bulgaria	IEEE Bulgaria Section, Educational Activities Officer	Until Dec. 2024
Valeri Mladenov	TU-Sofia, Bulgaria	IEEE Bulgaria Joint CAS&SSCS Chapter Chair	From Jan. 2025 -
Vasileios Ntinis	IEEE CAS	Circuits and Systems Education and Outreach (CASEO) TC Secretary	2024-2025

4. TC Significant Technical Leadership and Innovations

Please list 5 (or less) most significant TC/SIG activities in the past year, for example, but not limited to

- (1) Established/organized new CASS journals/conferences/workshops
 - a. Please include title, scope, status (e.g., submissions, published papers)
- (2) Organized special issues in CASS journal, special sessions/tutorials in CASS conferences, CASS seasonal schools, CASS industrial forums, or CASS competitions
 - a. Please include title, the guest editors/organizers, the year, and the month, the number of submissions, the number of papers published, and the impacts (e.g., the total number of citations/full text views so far or the total number of attendees)

Over the past year, several impactful activities were organized under the auspices of IEEE Circuits and Systems Society (CASS) Technical Committees and Special Interest Groups, aiming to enhance community engagement, industry collaboration, and knowledge dissemination. Below are the five most significant initiatives:

1, Industry Outreach Event: Optoelectronic Interfaces for Integrated Silicon Photonics

Organizer: Ricardo Carmona-Galán (Chair)

Scope: This industry-focused event aimed to bridge the gap between academic research and industrial application in the field of optoelectronic interfaces for silicon photonics. Topics covered included interface design challenges, integration strategies, and emerging applications.

Status: Successfully held with participation from both academia and industry.

Impact: Stimulated cross-disciplinary collaboration and fostered dialogue on integrating optoelectronics with CMOS platforms.

2, CASS Industry Forum: CASIF Open Source IC Design

Organizer: Alex James (Chair)

Scope: This forum promoted the use of open-source tools and workflows for integrated circuit design. It provided a platform for researchers and practitioners to present innovations and share best practices in open-source silicon development.

Status: Completed with active contributions from global participants.

Impact: Enhanced awareness of open-source methodologies in IC design and encouraged participation from early-career researchers and startups.

3. Outreach Event: Maker CHIPS

Organizer: Alex James (Chair)

Scope: Aimed at students and early-stage innovators, the Maker CHIPS event introduced basic principles and hands-on activities related to chip design and embedded systems.

Status: Successfully conducted as a community outreach program.

Impact: Promoted STEM engagement among students and supported capacity building in microelectronics education.

4. Seasonal School: Intelligence in Chip

Organizer: Alex James (Chair)

Scope: This seasonal school focused on embedding intelligence into chip design, with modules covering neuromorphic computing, AI hardware, and energy-efficient architectures.

Status: Held as part of the CASS seasonal school series.

Impact: High participation from academia and industry, leading to increased knowledge exchange on cutting-edge chip-level AI technologies.

Each of these events contributed to the core mission of CASS—advancing the theory, analysis, design, tools, and implementation of circuits and systems—and helped expand its global community through strategic outreach and educational activities.

- (3) Organized new CASS initiatives
- (4) Established cross-TCs/SIGs collaborations

1, Ricardo Carmona-Galán – Leadership in Sensory Systems and Cross-TC Collaboration

Role: Chair, Sensory Systems Technical Committee; Member, Special Interest Group on IoT Devices; Track Chair, ISCAS

Impact: Ricardo Carmona-Galán has played a key role in promoting collaboration across different technical areas within CASS. As Chair of the Sensory Systems TC and an active member of the SIG on IoT Devices, he has helped establish synergies between sensory interface technologies and emerging IoT applications. His position as Track Chair at ISCAS further supports the integration of diverse research domains within the flagship CASS conference. These efforts have significantly contributed to enhancing communication across CAS groups and aligning research trajectories.

2. Gert Cauwenberghs – Bridging Communities between CAS, EMB, and IEEE Brain

Roles: Vice President of Technical Activities, IEEE Engineering in Medicine and Biology Society (EMB); Steering Committee Member, IEEE Brain Technical Community

Impact: Gert Cauwenberghs' involvement in both EMB and IEEE Brain Technical Community provides a vital link between CASS and adjacent disciplines such as neuroengineering and biomedical circuits. His leadership has enabled joint initiatives and knowledge transfer, especially in the context of brain-inspired computing and healthcare-oriented circuit design. This inter-society collaboration enhances CASS's visibility and impact in life sciences and neuroscience-related domains.

3. Piotr Dudek – Enhancing Engagement through Demonstration Sessions at ISCAS 2025

Role: Demo Sessions Chair, ISCAS 2025

Impact: In his role as Demo Sessions Chair for ISCAS 2025, Piotr Dudek is leading the effort to increase hands-on, interactive engagement at the conference. These sessions are instrumental in encouraging collaboration between academia, industry, and young researchers. By showcasing functional prototypes and real-world implementations, the demo sessions foster a culture of practical innovation and cross-disciplinary dialogue.

These roles collectively demonstrate a strong commitment to expanding the collaborative fabric of CASS, promoting interdisciplinary research, and enhancing the society's global footprint. The leadership and service of these individuals have significantly advanced CASS's mission to integrate circuits and systems research with real-world technological and societal challenges.

We have started two new subtracks on ISCAS 2024 which continued on ISCAS 2025:

8.6 Memristive Sensing-and-Mem-Computing Paradigms

8.7 Neuromorphic Circuits with Memristors

Both are closely related to and organized by our community.

These subtracks mark a significant leap forward in the exploration of memristive technologies, offering a platform to showcase pioneering research and innovative breakthroughs.

- (5) Awards received by the TC/SIG or the TC/SIG members

Co-Guest Editor (with Paul P. Sotiriadis, Yiran Chen, and Abu Sebastian), IEEE Journal on Emerging and Selected Topics in Circuits and Systems (JETCAS), Special Issue on "Advances in Analog and Mixed-Signal Computing: Architectures, Theory, and Applications", publication scheduled for 2026.

Also Alex James received the Best post award 2024 from IEEE EDAPS.

5. New plans for the next year

Are there any new initiatives, workshops, journal special issues, conference special sessions, etc., that your TC or TC members are planning for the next year?

Gert Cauwenberghs has continued to champion stronger collaboration between the IEEE Circuits and Systems Society (CASS) and the IEEE Engineering in Medicine and Biology Society (EMBS), leveraging his role as EMBS Vice President of Technical Activities and his position on the IEEE Brain Advisory Committee. Building on this, our group plans to focus on aligning initiatives across societies, particularly in areas where circuits and systems play a critical role in advancing health, wellness, and neurotechnology applications.

Our community remains deeply committed to inclusivity and growth. In an effort to broaden participation, we are actively working to engage new members and address ongoing disparities in geographic representation and gender diversity. These efforts are fundamental to building a more equitable and representative technical community.

As interest in memristor-based technologies continues to accelerate—particularly within industrial sectors—we are placing special emphasis on welcoming contributors from a wide range of backgrounds. Industry professionals bring invaluable experience and insights that can greatly enhance both the scientific and practical impact of our work. Our goal is to foster a dynamic, interdisciplinary environment that drives innovation at the forefront of memristive circuits and systems.

Looking ahead, and in collaboration with our former chair Alon Ascoli, we are preparing new special issues and sessions to continue our momentum in this rapidly evolving field. Building on successful past editions, these upcoming initiatives will be finalized and officially announced during our upcoming Technical Committee meeting at ISCAS—scheduled within the next three weeks. We encourage all members to stay connected for updates, as we anticipate that these sessions will be a central feature at the 2025 IEEE ICECS and the 2026 IEEE ISCAS conferences.