

2023 Annual Report (June 2022 – May 2023)

BioCAS Technical Committee

IEEE Circuits and Systems Society

Chairman: Pantelis Georgiou
Chair-Elect/Secretary: Bo Zhao/Nicole McFarlane

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

The BioCAS TC met in a hybrid format at ISCAS 2022 Austin Texas on May 31st, 2022. A total of 60 participants were present.

2. Voting Members:

First Name	Last Name	Affiliation	Email	IEEE Grade	IEEE Region
Pantelis	Georgiou	Imperial College London	pantelis@imperial.ac.uk	Senior Member	8
Timothy	Constandinou	Imperial College London	t.constandinou@imperial.ac.uk	Senior Member	8
Mohamed	Atef	UAEU	moh_atef@uaeu.ac.ae	Senior Member	8
Sohmyung	Ha	New York University Abu Dhabi	sohmyung@nyu.edu	Senior Member	8
Robert	Rieger	University of Kiel	rieger@ieee.org	Senior Member	8
Shuenn-Yuh	Lee	National Cheng Kung University	ieesyl@mail.ncku.edu.tw	Senior member	10
Arindam	Basu	City University of Hong Kong	arinbasu@cityu.edu.hk	Senior Member	10
Pau-Choo	Chung	National Cheng Kung University	pchung@ee.ncku.edu.tw	Fellow	10
Hong	Chen	Tsinghua	hongchen@tsinghua.edu.cn		10
Man Kay	Law	University of Macau	MKLaw@um.edu.mo	Senior Member	10
Timir	Datta	Feinstein Institutes for Medical Research	tdatta@northwell.edu	Senior Member	1
Dai	Jiang	University College London	d.jiang@ucl.ac.uk	Senior Member	8
Dandin	Marc	Carnegie Mellon University, Electrical and Computer Engineering	mdandin@andrew.cmu.edu	Senior Member	2
Sahil	Shah	University of Maryland, College Park	sshah389@umd.edu	Member	2
Srinjoy	Mitra	University of Edinburgh	Srinjoy.mitra@ed.ac.uk	Senior Member	8
Alexander .	Fish	Bar Ilan university	Alexander.fish@biu.ac.il	Member	8
Sandro	Carrara	EPFL	Sandro.carrara@epfl.ch	Fellow	8
Bo	Zhao	Zhejiang University	zhaobo@zju.edu.cn	Senior Member	10
Nicole	McFarlane	University of Tennessee	mcfarlane@utk.edu	Senior Member	3

Hanjun	Jiang	Tsinghua University	jianghanjun@tsinghua.edu.cn	Senior Member	10
Danilo	Demarchi	Politecnico di Torino	danilo.demarchi@polito.it	Senior Member	8
Mohamad	Sawan	Westlake University	Sawan@westlake.edu.cn	Fellow	10
Chang	Joseph	Nanyang Technological University	ejschang@ntu.edu.sg	Senior Member	10
Jun	Ohta	Nara Institute of Science and Technology	ohta@ms.naist.jp	Fellow	10
Sameer	Sonkusale	Tufts University	sameer@ece.tufts.edu	Senior Member	7
Jie	Chen	University of Alberta	jchen@ece.ualberta.ca	IEEE	7
Kea-Tiong	Tang	National Tsing Hua University	kttang@ee.nthu.edu.tw	SM	10
Chua-Chin	Wang	National Sun Yat-Sen University	ccwang@ee.nsysu.edu.tw	Senior Member	10
Yuanijn	zheng	Nanyang Technological University	yjzheng@ntu.edu.sg	SM	8
Sara	Ghoreishizadeh	University College London	s.ghoreishizadeh@ucl.ac.uk	Senior member	8
Melpomeni	Kalofonou	Imperial College London	m.kalofonou@imperial.ac.uk	Member	8

	2022
Total number of TCs	%
Regions 1 – 6 (U.S.A.)	15
Region 7 (Canada)	6
Region 8 (Europe/Africa, Middle East)	42
Region 9 (Central/South America)	0
Region 10 (Asia/Pacific)	37

	2022
Total number of TCs	%
Male	91
Female	9

	2022
--	------

Total number of TCs	%
Academia	100
Industry	
Government	

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
Pantelis Georgiou	IEEE CAS	ISCAS 2023	Publicity Chair
Pantelis Georgiou	IEEE CAS	BioCAS 2023	Tutorial co-chair
Timothy Constandinou	IEEE CAS	BioCAS 2022, 2024	Tutorial co-chair
Sohmyung Ha	IEEE CAS	ISCAS	Session chair
Shuenn-Yuh Lee	IEEE CAS	ISCAS 2023	RCM, Session chair
Shuenn-Yuh Lee	IEEE CAS	BioCAS 2022	General Co-Chairs
Arindam Basu	IEEE CAS	IEEE System on Chip Conference (SOCC)	TPC member
Pau-Choo Chung	IEEE CAS	BioCAS 2022	Special session organizer
Hong Chen	IEEE CAS	IEEE International symposium on Asynchronous Circuits and Systems 2023	General Chair
Man Kay Law	IEEE CAS	IEEE Symposium on Circuits and Systems	RCM
Timir Datta	IEEE CAS	MWSCAS 2023	Registration Co-chair, Track Chair BioCAS
Dai Jiang	IEEE CAS	BioCAS 2022	Review Committee Member
Marc Dandin	IEEE CAS	ICECS 2022	Tutorial Presenter
Marc Dandin	IEEE CAS	ICECS 2022	Contributor (2 papers)
Marc Dandin	IEEE CAS	ISCAS 2023	Contributor (1 paper)
Marc Dandin	IEEE CAS	ISCAS 2023	Session Chair (2 sessions)
Marc Dandin	IEEE CAS	ISCAS 2023	Reviewer
Marc Dandin	IEEE CAS	BIOCAS 2022	Reviewer
Marc Dandin	IEEE CAS	MWSCAS 2023	Registration Co-Chair
Marc Dandin	IEEE CAS	MWSCAS 2023	Review Committee Member
Marc Dandin	IEEE CAS	MWSCAS 2023	Contributor (4 papers)
Sahil Shah	IEEE CAS	IEEE International NEWCAS 2022	Presenter, Session Chair, Student Award Committee
Sahil Shah	IEEE CAS	IEEE International Symposium on Circuits and Systems (ISCAS) 2023	Attendee, Session Chair
Srinjoy Mitra	IEEE CAS	NEWCAS 2023	General Chair
Alexander Fish	IEEE CAS	LASCAS	Program Chair
Alexander Fish	IEEE CAS	ISCAS	RCM
Sandro Carrara	IEEE CASS	IEEE ISCAS	Keynote Chair
Bo Zhao	IEEE CAS, SSCS	IEEE International Conference on Integrated Circuits, Technologies and Applications (ICTA 2023)	Tutorial Chair
Nicole McFarlane	IEEE CAS	BioCAS 2022	Special Sessions Co-chair
Nicole McFarlane	IEEE CAS	ISCAS 2022	WiCAS Co-chair
Hanjun Jiang	IEEE CASS	ISCAS'23	RCM

Hanjun Jiang	IEEE CASS	BioCAS'22	RCM
Danilo Demarchi	IEEE CAS	CAS Seasonal School on AgriFood Electronics	Organizer
Danilo Demarchi	IEEE CAS, EMBS	BioCAS 2022	TPC Co-Chair
Mohamad Sawan	IEEE CAS	NEWCAS 2022 APCACS 2022 AICAS 2022	Honorary Chair Honorary Chair General Co-Chair
Jun Ohta	CAS, EMBS, SSCS	IEEE BioCAS 2022	International liaison committee
Jun Ohta	CAS, EMBS, SSCS	IEEE BioCAS 2023	Special Session Chair
Jie Chen	IEEE CAS	BIOCAS 2022 and BIOCAS 2023	Technical Program Co-chair
Kea-Tiong Tang	IEEE CAS	IEEE Biomedical Circuits and Systems Conference (BioCAS)	General Chair
Kea-Tiong Tang	IEEE CAS	IEEE International Conference on Artificial Intelligence Circuits and Systems (AICAS)	Special Session Chair
Kea-Tiong Tang	IEEE CAS	International Symposium on Integrated Circuits and Systems (ISICAS)	Technical Program Chair
Chua-Chin Wang	IEEE CAS	APCCAS 2022	Reviewer
Chua-Chin Wang	IEEE CAS	ISCAS 2023	Reviewer
Sara Ghoreishizadeh	IEEE CAS	IEEE BioCAS 2023	Demo co-chair
Sara Ghoreishizadeh	IEEE CAS	IEEE ISCAS 2023	Review Committee member
Sara Ghoreishizadeh	IEEE CAS	IEEE ICECS 2022	Publication co-chair

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

Your Name	Conference Sponsors	Conference/Event Title	Your Role
Pantelis Georgiou	IEEE Sensors Council (CASS member society)	IEEE Biosensors	General Chair
Sandro Carrara	IEEE Sensors Council (CASS member society)	IEEE Biosensors	Tutorial Chair
Mohamad Sawan	IEEE CAS	International Conference on Microelectronics (ICM 2022)	General Co-Chair
Sameer Sonkusale	IEEE CAS and IEEE Sensors Council	2022 IEEE Sensors Conference	Special Session Track Chair
Sameer Sonkusale	IEEE CAS	2023 Midwest Symposium on Circuits and Systems	Publicity Chair

Chua-Chin Wang	IEEE CAS	ISOC2022	Reviewer
Melpomeni Kalofonou	IEEE Sensors Council	IEEE BioSensors 2023 conference	Technical Programming 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
Pantelis Georgiou	IEEE CAS	Transactions on Biomedical Circuits and Systems (TBioCAS)	Associate Editor
Timothy Constandinou	IEEE CAS	Transactions on Biomedical Circuits and Systems (TBioCAS)	Associate Editor
Mohamed Atef	CAS	TBioCAS special issue on: BioCAS 2021-2022	Guest Editor
Mohamed Atef	CAS	TBioCAS	Associate Editor
Sohmyung Ha	IEEE CAS	Transactions on Biomedical Circuits and Systems	Associate Editor
Robert Rieger	IEEE CAS, BME	IEEE Transactions on Biomedical Circuits and Systems	AEIC Digital Communications
Robert Rieger	IEEE CAS	IEEE Transactions on Circuits and Systems I	AE
Shuenn-Yuh Lee	IEEE CAS	IEEE Trans. on Biomedical Circuits and Systems	Associate Editor
Arindam Basu	IEEE CASS and EMBS	IEEE Trans. on Biomedical Circuits and Systems	Associate Editor
Pau-Choo Chung	IEEE CIS	IEEE Transactions on Artificial Intelligence (TAI)	Associate Editor
Hong Chen	IEEE CAS	IEEE Transactions on Biomedical Circuits and Systems	Associate Editor
Sahil Shah	IEEE CAS	TCAS-I	Reviewer
Srinjoy Mitra	IEEE CAS	TCAS1	Guest Editor
Sandro Carrara	IEEE Sensors Council (CASS member society)	IEEE Sensors Journal	Editor in Chief
Sandro Carrara	IEEE CASS	IEEE Transactions in Biomedical Circuits an Systems	Associate Editor
Bo Zhao	IEEE CAS	IEEE Transactions on Circuits and Systems I: Regular Papers	AE
Nicole McFarlane	IEEE CASS	IEEE Transactions in Biomedical Circuits an Systems	Associate Editor
Nicole McFarlane	IEEE CASS	IEEE Open Journal of Circuits and Systems	AEIC for Dig. Comm for 2022, EIC 2023
Hanjun Jiang	IEEE CASS, EMBS	IEEE Transactions on Biomedical Circuits and Systems	Associate Editor
Hanjun Jiang	IEEE CASS	IEEE Transactions on Circuits and System II: Express Briefs	Associate Editor
Danilo Demarchi	IEEE CAS, SC, IMS, CRFID	IEEE Transactions on AgriFood Electronics	EiC
Mohamad Sawan	IEEE CAS	TAFE (launched in Jan 2023)	VP Pubs
Mohamad Sawan	IEEE CAS	TCASAI (under preparation)	VP Pubs
Sameer Sonkusales	IEEE CAS	IEEE Transaction on Biomedical Circuits and Systems	Associate Editor
Jie Chen	IEEE CAS	IEEE Transaction on Biomedical Circuits and Systems	Associate Editor
Kea-Tiong Tang	IEEE CAS	IEEE Transaction on Biomedical Circuits and Systems (TBioCAS)	Editor-in-Chief

Sara Ghoreishizadeh	IEEE CAS	IEEE Transactions on Biomedical Circuits and Systems	Associate editor
---------------------	----------	--	------------------

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
Sandro Carrara	Student Award at the IEEE CAS conference MOCASST	June 2022
Sameer Sonkusale	BITS Pilani Distinguished Alumni	
Chua-Chin Wang	IEEE ICICDT Best Paper Award.	2022
Yuanjin Zheng	IEEE Distinguished Lecture	2023-2024

3.4. Keynote Speeches/Invited Talks:

Your Name	Invited by	Event/Conference Title	Talk Title	Date
Pantelis Georgiou		IEEE International Workshop for Future Intelligent Circuits and Systems (IW-FICAS)	Microelectronics for DNA detection: From Sensors to Rapid Diagnostic Systems using CMOS Ion-Sensitive Field Effect Transistors	5 th August 2022
Pantelis Georgiou		IEEE Spring school at Macquarie University, Sydney, on Smart Sensors, ML and AI: Remote Monitoring During Challenging Times,	Microelectronics for DNA detection: From Sensors to Rapid Diagnostic Systems using CMOS Ion-Sensitive Field Effect Transistors	19 th September 2022
Shuenn-Yuh Lee	Oliver Lue	2022 IEEE Symposium on VLSI technology and circuits	A Wireless Urine Detection System and Platform with Power-Efficient Electrochemical Readout ASIC and ABTS-CNT Biosensor	Jun. 16, 2022
Arindam Basu	tinyML Asia OC	tinyML Asia Technical Forum	Keynote: In-memory computing and Dynamic Vision Sensors: Recipes for tinyML in Internet of Video Things	Nov 2022
Arindam Basu	Conference OC	Neuromorphic Materials, Devices, Circuits and Systems (NeuMatDeCaS) conference	In-memory computing across times and scales	Jan 2023
Arindam Basu	Conference OC	Fourth workshop at Brain, Computation and Learning	Neuromorphic Technologies in Brain-machine Interfaces	Jan 2023
Arindam Basu	Conference OC	IEEE-CASS Seasonal School titled Intelligence in Chips: Integrated Sensors and Memristive Computing	In-memory computing meets Neuromorphic event-driven vision	Nov 2022
Pau-Choo Chung	Shuenn-Yuh Lee	2022 BioCAS pre-conference workshop Brain-Interface CAS	ALOVAS: A Pathology image analyzer	12, October 2022
Pau-Choo Chung	Mu-Yen Chen	IET Summer School Keynote Speaker	ALOVAS: Digital Pathology image analyzer	28, October 2022
Pau-Choo Chung	Fang-Pang Lin	SEAIP 2022	Distributed collaborative platform for pathology image analysis	7, December 2022
Pau-Choo Chung	Kevin Yang	2022 NSTC-JST WORKSHOP	Pathology Image Analysis and Its Challenging Issues When Faced with AI	19, December 2022
Pau-Choo Chung		2023IEEE CIS Webinar	Resolving Cross-Hospital Variation Effects in AI-based Pathology Image Analysis	3, April 2023
Marc Dandin	ICECS 2022	ICECS 2022	Fundamentals and Applications of Modern Single-Photon Detector Circuits and Processing Systems	October 24-26, 2022
Sandro Carrara	Samuel Tang	IEEE BioCAS, Taipei	In Memory Sensing & Computing	October 2022
Sandro Carrara	Danick Briand	Swiss Sweat Science and Technology Symposium (3STS), Lausanne	The Body Dust Concept	June 2022
Sandro Carrara	Danick Briand	IEEE 12th International Conference Nanomaterials	Discovery of Memristive Biomaterials for Sensory Aims	Spetember 2022

		Applications & Properties, Kraków, POLAND		
Bo Zhao	OPPO	Workshop on Wireless Passive Chips	Wireless Sensing Chips	03/22/2023
Nicole McFarlane	ICECS 2022	ICECS 2022	Fundamentals and Applications of Modern Single-Photon Detector Circuits and Processing Systems	October 2022
Daniilo Demarchi	IEEE CAS	LASCAS 2023	Let the Plants do the Talking: Smart Agriculture by the Messages Received from Plants and Soil	Keynote
Mohamad Sawan	Organizing Committee Chair	BioCAS Workshop, Virtual, Tainan, Taiwan	Closed-loop Systems for Efficient Brain-machine Interfaces	Oct. 2022
Jun Ohta	ICBEA2023 Program Committee	International Conference on Biomedical Engineering and Applications (ICBEA 2023)	Implantable Optoelectronic Devices Toward Photoceuticals	2023/4/23
Jun Ohta	Brain Interface CAS Committee	Brain Interface CAS, BioCAS pre-conference workshop	Brain Implantable Optoelectronic Devices for Measuring and Controlling Biological Functions	2022/10/12
Jun Ohta	ISOM2022 Program Committee	International Symposium on Imaging, Sensing, and Optical Memory 2022(ISOM2022)	Control and Measurement of Biological Functions by Light with Optoelectronic Devices	2022/8/1
Kea-Tiong Tang	xxx	IEEE 16 th International Conference on Solid-State and Integrated Circuit Technology (ICSICT)	In-Sensor and In-Memory Computing for TinyML	Oct. 2022
Kea-Tiong Tang		2 nd IEEE International Conference on Electronic Communications, Internet of Things and Big Data (ICEIB)	A miniature Gas Sensing System for Breath Analysis	Jul. 2022
Melpomeni Kalofonou	Zhejiang Health Commission (ZHC)	Imperial College's Centre for Continuing Professional Development Seminars	"Latest updates in Microchip Technology for Cancer Diagnostics"	05-2022

3.5. Other distinguished IEEE services

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

Your Name	Organization	Position/Activities	Period
Timothy Constandinou	IEEE CAS Society	Nominations Committee	2020-22
Timothy Constandinou	IEEE Brain	CAS Society representative	2023-
Mohamed Atef	IEEE-UAE Section	CASS Chapter Chair	2022-2023
Shuenn-Yuh Lee	IEEE A-SSCC	Organizing Committee Chair	2022
Arindam Basu	IEEE CASS TC on Neural Systems and Applications	Chair	2021-2023
Pau-Choo Chung		Organizing Committee / MICCAI 2022 workshop on Medical Image Assisted Biomarkers' Discovery	18-22, September, 2022
Pau-Choo Chung	IEEE Systems Council	General Co-Chair / The IEEE International Conference on Recent Advances in Systems Science and Engineering (RASSE) 2022	7-10, November 2022
Man Kay Law	ISSCC	Far East Vice Chair	2022 ~ 2023
Sandro Carrara	Vice President Publications	IEEE Sensors Council (CASS member society)	2023-2024
Nicole McFarlane	IEEE CAS	BoG Member	2021-2023
Nicole McFarlane	IEEE CASS	BioCAS TC Secretary	2022-2024

Mohamad Sawan	CASS, Excom	VP Publications	2019-2022
Mohamad Sawan	CASS, BioCAS Conf.	Steering committee	2023-....
Mohamad Sawan	CASS, AICAS Conf.	Steering committee	2023-....
Jun Ohta	IEEE	EMBS Fellow Evaluation Committee	2021-2023
Jie Chen	IEEE Biomedical Engineering Society (IEEE EMBS)	Technical Committee Chair of BioNanotechnology and BioMEMS	2022-2023
Jie Chen	IEEE CAS Board of Governors	Technical Activities	2022-2023
Kea-Tiong Tang	IEEE CASS	VP-RAM	2022/01~2023/12
Kea-Tiong Tang	IEEE Taipei Section	Chair	2021/01~2023/01
Yuanjin Zheng	IEEE Singapore Chapter- Circuits and Systems Branch	Vice chair / Best Local chapter	2022-2023
Yuanjin Zheng	IEEE Circuits and Systems Society (CASS) Standards Activities Sub-Division (SASD)	Voting member	2022-2023
Yuanjin Zheng	IEEE Singapore Chapter- Circuits and Systems Branch	Vice chair / Best Local chapter	2022-2023
Yuanjin Zheng	IEEE Circuits and Systems Society (CASS) Standards Activities Sub-Division (SASD)	Voting member	2022-2023
Sara Ghoreishizadeh	IEEE CAS	BoG member	2020-2022

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)
- (3) Organized new CASS initiatives
- (4) Established cross-TCs/SIGs collaborations
- (5) Awards received by the TC/SIG or the TC/SIG members

A. Basu:

- Member, Domain-Specific Accelerators Standards Committee of IEEE Circuits and Systems Society (CAS/DSASC), 2022-2024

D. Demarchi:

- Established the IEEE Transactions on AgriFood Electronics (TAFE)
- Established and Co-Chaired the SIG on AgriFood Electronics

M. Sawan:

- Organized a Special session titled “Artificial Intelligence Boosted Circuits and Systems for Brain-Machine Interface”, IEEE-AICAS 2022, Korea.

M. Atef:

- - Special Issue on Selected Papers from IEEE BioCAS 2021
- Published in: [IEEE Transactions on Biomedical Circuits and Systems](#) (vol 16, no. 4, August 2022)
- Guest Editorial: Chung-Chih Hung, **Mohamed Atef** and Vanessa Chen
- The eight papers in this special issue were presented at the 2021 BioCAS in Berlin, Germany.

J. Chen:

- Proposed CAS outreach program “Innovation Generation Basics Towards an Entrepreneurial Journey in Circuits and Systems” and received \$16,000 USD support.
-

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?

R. Reiger:

- Journal special issues in TBCAS are planned and will be reported by the EiC.
- Digital communication of TBCAS on the web and in the social media will be improved and expanded. Example: Animated Graphical Abstracts accompanying published papers.

B. Zhao:

- DEMO Session planned at BioCAS 2023.

D. Demarchi:

- Establishing the new conference IEEE Conference on AgriFood Electronics (CAFE), September 2023
- Establishing the CASIF Forum of Industry for AgriFood Electronics (IAFE), September 2023
- Serve as General Co-Chair of BioCAS 2023.

M Sawan:

- General Chair AICAS 2023
- General Co-chair ICM 2023
- Honorary Chair NEWCAS 2023.

M. Atef:

- Guest Editorial for TBioCAS Special Issue on Selected Papers from IEEE BioCAS 2022.