



Annual Report of the Biomedical and Life Science Circuits and Systems (BioCAS) Technical Committee 2017/2018

Compiled by Jennifer Blain Christen, Secretary of the BIOCAS TC

1) Executive Summary

The Biomedical and Life Science Circuits and Systems (BioCAS) Technical Committee of the IEEE CAS society has had a very successful year. The number of technical committee members has increased from 132 to 135. They have been actively promoting the field and advancing both knowledge and dissemination. Two major activities are well-established cornerstones of our society's activities, the BioCAS conference and the IEEE Transactions on BioCAS (TBioCAS). Both these efforts are attracting high quality publications. A total of 306 papers were submitted to BioCAS17 with 207 accepted. The conference acknowledged the trend in food-related research by arranging FoodCAS event held in conjunction with BioCAS. Tutorials and keynotes were chosen with an emphasis on food-related research. TBioCAS has become a premier venue for publishing cutting edge advances at the interface between circuits, systems, biomedical engineering, bioinspired settings, or validation in the clinic. Thanks to the efforts of the associate editors and reviewers, the average manuscript review took 36.5 days to reach a first decision (24% improvement), and 57.1 days to reach a final decision. TBioCAS submissions increased 27.7% to currently 355 submissions annually. Also, two annual special issues (Advances and open challenges for integrated circuits detecting biomolecules and Cardiovascular system monitoring and therapy: innovative technologies and internet of things) were published. Acceptance rate is 36% per original submission. The impact factor is 2.94, and the Article Influence Score is 1.1.

The members of the BioCASTC engaged in numerous noteworthy activities. Our members have served as the general chair for ISCAS over the past three years. We have two distinguished lecturers, Pantelis Georgiou and Hao Yu. Pamela Abshire, Andreas Demosthenous, and Rahul Sarpeshkar were elevated to fellows of the IEEE. Our members gave a number of keynote and invited lectures at prestigious venues, organized workshops and conferences. We also had a number of very impressive awards including, 2018 Brockhouse Canada Prize awarded to Benoit Gosselin and Darlington Best Paper Award for Ge Tong. The executive summary is just a brief overview of the TC activities and achievements, please read below for the detailed report.

2) IEEE ISCAS 2018, Florence, Italy

The biomedical circuits and system track had 120 submissions (8% of all submissions, 69 were accepted (57.5% acceptance ratio and 8.7% of all papers accepted). This is 2% decrease compared to previous years (2016: 123, 2015: 104, 2014: 120, 2013: 122, 2012: 163, 2011: 74, 2010: 85). The submissions are tied for 3rd most among all tracks after Analog and Mixed Signal Circuits and Systems and Digital

Integrated Circuits and Systems and the number of accepted papers is 3rd most (not including special sessions). Track Chairs Julio Georgiou, Kea-Tiong (Samuel) Tang, and Jennifer Blain Christen coordinated the review process. A total of 567 reviewers were assigned, with an average of 4.7 reviewers assigned per paper with an average of 4.525 reviews received. The accepted papers were assigned into 41 lecture and 28 poster presentations organized in 8 lecture and 3 poster sessions. We had 31 member from the BioCAS TC serve as RCMs. They did a fantastic job providing excellent and timely reviews.

The average review per paper was 27%, up from last year, and slightly above the average across the TCs. The results of the review process was an acceptance of 57.5% (compared to 48% last year).

Topic	Subject Areas	Submission	% of Sub	Acceptance	% Acc
6.0	Biomedical Circuits and Systems	0	0%	0	0%
6.1	Biosignal Amplifiers	8	6.7%	4	5.8%
6.2	Wireless and Implantable/Injectable Technology, Circuits and Systems	21	17.5%	12	17.4%
6.3	Circuits and Systems for Human Machine Interfaces/Brain Machine Interfaces	10	8.3%	4	5.8%
6.4	Integrated Biomedical Systems, BioMEMS, and Bio-Sensors/Actuators	11	9.2%	7	10.1%
6.5	Lab-on-CMOS and Lab-on-Chip	7	5.8%	6	8.7%
6.6	Bio-Inspired and Biomolecular Circuits and Systems	17	14.2%	11	15.9%
6.7	Wearable Sensors, Circuits, and Systems	5	4.2%	3	4.3%
6.8	Point of Care Biomedical Diagnostics	25	20.8%	15	21.7%
6.9	Biometrics and Biomedical Signal/Image Processing, Circuits & Systems	4	3.3%	1	1.4%
6.10	Medical Informatics and Expert Systems	12	10%	6	8.7%
6.11	Other Areas in Biomedical Circuits and Systems	0	0%	0	0%
Total		123		69	

The TC members also organized 2 out of 17 tutorials and 1 of 9 mini-tutorials. The TC members contributed a great deal to the conference including the general chairs and a number of members of the organizing committee. The track chairs (J. Georgiou, S. Tang, and J. Blain Christen) would like to thank all the authors, reviewers, RCM, session chairs for their time and effort spent to enhance the BIOCAS activities and to help make ISCAS a success.

As is customary, an award sub-committee was formed to vote on the best paper award for the BioCAS track at ISCAS. This year (2018) winner was the paper titled "Portable photoacoustic system for noninvasive blood temperature measurement" by Siyu Liu, Xiaohua Feng, Zhang Ruochong, Yuanjin Zheng. This award is given out at the IEEE BIOCAS TC meeting in ISCAS in Florence.

3) IEEE Biomedical Circuits and Systems 2017 Conference,

The 13th IEEE Biomedical Circuits and Systems Conference (BioCAS) was held in Turin, Italy from Oct. 19th to 21th, 2017. Serving as a premier international forum for researchers and engineers to present their state-of-the-art multidisciplinary research and development activities at the frontiers of medicine, life sciences, and engineering, BioCAS has enjoyed its growing impact in the research community.

We received a total of 306 submissions worldwide and increase of 11% from 2016, with 82 from Asia/pacific, 132 from Europe, 63 from North America, 1 from South America, and 3 from Africa. The strong number largely owes to a broadened participation by members of the BioCAS community through a concerted effort from IEEE CAS, IEEE EMB, IEEE SSC and IEEE Brain Initiative. A total of 54 Review Committee Members (RCMs) coordinated the peer review of all submitted papers. A total of 1054 reviews were received, with an average of over 4 reviews per paper. A total of 207 submissions,

were accepted into the program, resulting in an acceptance rate of 68 percent. Accepted papers were grouped into eight Lecture Sessions totaling 18 oral presentation, one special session with 12 papers, four tutorials, 19 live demos, and 8 poster Sessions with 119 posters.

4) IEEE Transactions on Biomedical Circuits and Systems

Co-sponsored by the IEEE Circuits and Systems Society and IEEE Engineering in Medicine and Biology Society, the IEEE Transactions on Biomedical Circuits and Systems (TBioCAS) entered its 12th year of existence, and over the years has emerged as the premier venue for publishing research advances and reviews at the interface between circuits, systems, biomedical engineering, bioinspired settings, or clinically validated. More specifically, the scope of the Journal has been updated and approved over this past year as follows:

“TBioCAS addresses areas at the crossroads of Circuits and Systems and Life Sciences. The main emphasis is on microelectronic issues in a wide range of applications found in life sciences, physical sciences and engineering. The primary goal of the journal is to bridge the unique scientific and technical activities of the IEEE Circuits and Systems Society to a wide variety of related areas. General, theoretical, and application-oriented papers in the biomedical and circuits and systems technical areas with a Circuits and Systems perspective are encouraged for publication in TBioCAS. To be considered in scope, submissions to TBioCAS must demonstrate synergies between circuits and systems and medicine/biology.”

2017-2018 has been an excellent year for TBioCAS. Thanks to the efforts of the associate editors and reviewers, the average manuscript review took 36.5 days to reach a first decision (24% improvement), and 57.1 days to reach a final decision. TBioCAS submissions increased 27.7% to currently 355 submissions annually. A total of five special issues (SIs) were managed over the year as follows:

- Two regular SIs (IEEE ISCAS: April, and IEEE BioCAS: October);
- Three SIs resulting from a call for SI proposals
- One special section (IEEE ISSCC: December).

The page budget remained the same than previous year (1500 pages), with no increase is projected for 2018. Acceptance rate is 36% per original submission. The impact factor was stabilized recently at 2.94 (39.5% increase), the 5-Year IF is 3.66 (26.5% increase). The Article Influence Score is 1.1, which represents great values (TBME is 0.92, and TNSRE is 0.96).

The best paper award was given to the paper: Adrien F. Vincent, Jérôme Larroque, Nicolas Locatelli, Nesrine Ben Romdhanem, Olivier Bichler, Christian Gamrat, Wei Sheng Zhao, Jacques-Olivier Klein, Sylvie Galdin-Retailleau, Damien Querlioz titled "Spin-transfer torque magnetic memory as a stochastic memristive synapse for neuromorphic systems", IEEE Transactions on Biomedical Circuits and Systems (Volume 9, Issue 2, Apr. 2015) Pages 166-174.

5) Short Courses, Plenary Sessions, Keynote Speakers, Invited Lectures

Benoit Gosselin

- Keynote, “Collaborative R&D in Biomedical Engineering: From University to Industry,” *IEEE Research Boost*, École de Technologie Supérieure, Montréal, Canada, 06/2017
- Public lectures “Augmenter les performances humaines grâce aux nouvelles technologies,” *Pint of Science*, Quebec City, Canada, 5/2017

- Invited talk “Wireless Multimodal Body-Machine Interface: NSERC Collaborative R&D Program”, Kinova Robotics, Montreal, Canada, 12/2017
- Invited talk “Wireless Optoelectronic Microsystems for Implantable and Wearable Biomedical Applications,” ReSMiQ Innovation Day 2017, Microsystems Strategic Alliance of Québec, Montreal, Canada, 10/2017
- Invited talk “Wireless Optoelectronic Microsystems for Implantable and Wearable Biomedical Applications,” Journée du COPL, 2017, Quebec City, Canada, 6/2017
- Invited talk “Augmenter les performances humaines grâce aux nouvelles technologies,” Pint of Science, Quebec City, Canada, 5/2017
- Refereed Invited presentations “A Fully Implantable Multichip Neural Interface with a New Scalable Current-Reuse Front-End,” *IEEE NEWCAS Conference (NEWCAS’17)*, Strasbourg, France, 6/2017.
- Refereed Invited presentations “Wireless Brain Computer Interfaces for Synchronized Optogenetics and Electrophysiology,” *IEEE International Symposium on Circuits and Systems (ISCAS’17)*, Baltimore, USA, 5/2017
- Refereed Invited presentations “A Wirelessly Powered High-Speed Transceiver for High-Density Bidirectional Neural Interfaces,” *IEEE International Symposium on Circuits and Systems (ISCAS ’17)*, Baltimore, USA, 5/2017

Zhijia Wang

- Yingdan Li, Fei Chen, Zhuoyi Sun, Zhaoyang Weng, Xian Tang, and Hanjun Jiang, Zhijia Wang, “System Architecture of a Smart Binaural Hearing Aid Using a Mobile Computing Platform”, The IEEE 12th International Conference on ASIC Oct.25-28 · 2017, Hotel Pullman Guiyang, Guiyang, China
- Zhijia Wang, Tsinghua University, Peking, PR of China: "CMOS mm-Wave Integrated Circuit Design Techniques for Automotive Radar", EUROPEAN MICROWAVE WEEK 2017, NÜRNBERG CONVENTION CENTER, NUREMBERG, GERMANY, 8TH - 13TH OCTOBER 2017
- Zhijia WANG, Hanjun Jiang, “A RF transceiver satisfying the requirements of medical applications and its derived medical devices” Keynote Presentation, 7th International Symposium on InfoComm & Mechatronics Technology in Bio-Medical & Healthcare Application, (IS 3T-in-3A 2017), December 13-16, 2017, Nanjing

Wouter A. Serdijn

- Wouter A. Serdijn: Bioelektronische Medicijnen: beter worden met elektriciteit en elektronica, keynote address, Dutch Hacking Health Leiden, Leiden, April 20, 2018
- Wouter A. Serdijn: Electroceuticals: the engineering perspective, challenges and solutions, plenary talk, Workshop on Neuroengineering: Electroceuticals, Porto, Portugal, April 9--10, 2018
- Wouter A. Serdijn: Epilepsy and technology in therapy: Electroceuticals, invited talk, 20th Annual International Clinical Symposium Kempenhaege: “Update@Kempenhaeghe.nl”, Heeze, the Netherlands, March 21--23, 2018
- Wouter A. Serdijn: Medical devices for electrophysiology of the heart, 16th Dutch-German Joint Meeting of the Molecular Cardiology Working Groups, Amsterdam, March 15--17, 2018
- Wouter A. Serdijn: Het medicijn van de toekomst neem je slechts eenmalig; en het is een elektronisch medicijn, invited talk, Hogeschool van Amsterdam, Amsterdam, March 15, 2018
- Wouter A. Serdijn: The medicine of the future you’ll need to take only once, and it’s bioelectronic, keynote address, Dutch Ultra Low-Power Conference, Nijmegen, the Netherlands, March 7, 2018

- Wouter A. Serdijn: Bioelectronics @ Delft, invited talk, NXP, Eindhoven, the Netherlands, February 26, 2018
- Wouter A. Serdijn: Electroceuticals -- bio-electronic medicine as an alternative to drugs, keynote address, XXXII Conference on Design of Circuits and Integrated Systems, Barcelona, 22nd-24th November, 2017
- Wouter A. Serdijn: Cyborgs among us, invited presentation, InScience Dutch International Science Film Festival, Nijmegen, 08-12 November, 2017
- Wouter A. Serdijn: Getting Better with Electroceuticals -- circuits and systems for bioelectronic medicine to the rescue, keynote address, European Conference on Circuit Theory and Design (ECCTD) 2017, Catania, Italy, September 4-6, 2017
- Wouter A. Serdijn: Electroceuticals -- bio-electronic medicine as an alternative to drugs, IMDI NeuroControl Symposium 2017, Woudschoten, the Netherlands, May 15-16, 2017

Timir Datta-Chaudhuri

- Bioelectronic Medicine (graduate course) – Elmezzi Graduate School Summer 2017

Manuel Delgado-Restituto

- “Dynamic range considerations for neural recording channels”, CAS Chapter Uruguay Workshop School of Electrical Engineering, Univ. de la República, Uruguay, March 2018.
- “Neural recording techniques and challenges”, IEEE CAS Singapore, Nanyang Technological University, Singapore, March 2018
- “Circuits for neural recording”, Seminar at the University of Brescia, Italy, May 2017

Kea-Tiong Tang

- “A gas sensing SoC for intelligent ICT”, 14th international SoC design conference, November 2017.
- “Miniature electronic nose system and applications”, invited seminar at Shenzhen University, November 2017

Christoph Posch

- “Event-based vs conventional cameras for ADAS and autonomous driving applications”, invited talk at Autosens conference, Brussels, September 2017

Sameer Sonkusale

- Invited Seminar, “Thread diagnostics: sensors, circuits, microfluidics and drug delivery”, **Tufts University**, Physics Department, April 2018.
- Invited Seminar, “Flexible sensors and bioelectronics”, **Tsinghua University**, **Workshop on Bio-inspired Circuits: Past, present and future outlook**, Dec 2017
- Invited Seminar, “Flexible sensors and diagnostics using unconventional materials”, **Brown University**, Providence, November 2017
- Invited Seminar, “Flexible sensors and diagnostics on paper and thread”, **Tufts University Department of Chemical Engineering**, September 2017

Matthew Johnston

- Invited Talk, IBM TJ Watson Research Center, NY, September 15, 2017
- Invited Talk, HP Advanced Technical Talk, OR, November 3, 2017
- Invited Seminar, Boise State University, ID, November 8, 2017

- Invited Seminar, University of Washington, WA, November 28, 2017

Melpomeni Kalofonou

- “Chemical sensing microchip technology for liquid biopsies in breast cancer,” Invited Talk at the World Precision Medicine Congress 2018 - Making Medicine Personal, London, UK, 16-05-2018
- “Generating electronic medical devices for detection of DNA in LMIC environments,” Invited Seminar by European Association for Cancer Research (EACR) - Meeting the challenge of treating cancer in low and middle-income countries, Nottingham, UK, 23-01-2018
- “Chemical sensing microchips - a new paradigm for breast cancer,” Invited Lecture at Microsoft London, Hackathon - One Week 2017, 26-07-2017.

Mohamad Sawan

- “Neurotechnology Microdevices for Neurodegenerative Diseases: A Multidisciplinary Approach”, Invited Lecture, Westlake University, Hangzhou, China, April 2018.
- “Localizing epileptic activities through superparamagnetic nanoparticles”, Invited Lecture, RBIQ, Montreal, March 2018.
- “Smart Medical Microdevices for the Treatment of Neurodegenerative Diseases”, Invited Lecture, School of Automation Science and Electrical Engineering, Beihang University, Beijing, China, Jan. 2018.
- “Intracortical Microdevices for the Treatment of Neurodegenerative Diseases”, Invited Lecture, Wuhan University, Wuhan, China, Jan. 2018.
- “Epileptic Seizures Management: Localization, Onset Detection and Abortion”, Keynote, FETCH, Saint-Malo, France, Jan. 2018.
- “Lab-on-Chip Based Biosensors for the Diagnostic of Neurodegenerative Diseases”, Invited Lecture, SJTU, Shanghai, China, Oct. 2017.
- “Management of the Bladder Functions with Spinal Impairment: Monitoring and Subsequent Neurostimulation”, Keynote, IEEE-ICABME, Lebanon, Oct. 2017.
- “Brain-Microsystem Interfaces for the Diagnostic and Treatment of Neurodegenerative Diseases”, Invited Lecture, NCTU, Taipei, Taiwan, Oct. 2017.
- “Neurodegenerative Diseases: Multidimensional Implementation Challenges”, Keynote, SEMICON, Taipei, Taiwan, Oct. 2017.
- “Addressing Neurodegenerative Diseases: A Multidisciplinary Approach”, Invited Lecture, EEE Dept, NTU, Singapore, Oct. 2017.
- “Brain-Microsystem Interfaces for the Diagnostic and Treatment of Neurodegenerative Diseases”, Invited Lecture, MediaTek, Singapore, Aug. 2017.
- “Brain-Microsystem Interfaces for the Discovery and Treatment of Neurodegenerative Diseases”, Keynote, CKC 2017, Montreal, July 2017.
- “Smart Medical Devices for the Discovery and Treatment of Neurodegenerative Diseases”, Keynote, IEEE-European Test Symposium, Limassol, Cyprus, May 2017.
- “Are Brain-microsystems Interfaces Ready for Efficient Diagnosis and Treatment of Neurodegenerative Diseases?”, Keynote, IEEE-Canadian Conference on Electrical and Computer Engineering Workshop, Windsor, Canada, May 2017.

Mohamed Atef

- Guest Speaker at NYU Shanghai, May 2017.

Ross Walker

- “Direct Neural Interfaces for Medical and Non-Medical Applications”, invited seminar at the Emerging Technologies Conference (ET CMOS), Whistler, British Columbia, CA, May 2018.
- “Integrated Neural Interfaces”, invited seminar at the Midwest Symposium on Circuits and Systems (MWSCAS), Boston, Massachusetts, USA, August 2017.

Robert Rieger

- “CMOS Circuit Design for Students,” Kaohsiung University of Applied Sciences, 20. December 2017

Pedram Mohseni

- **P. Mohseni**, “High-fidelity sensing and manipulation of brain neurochemistry,” *Dept of Electrical Engineering, Tsinghua University, Beijing, China, March 15, 2018.*

Nikolic Konstantin

- World Economic Forum, Podcast: Sensors Transformation Map, November 2017

Dag T. Wisland

- D.T. Wisland, “UWB CMOS Impulse Radar System-on-Chip – Principles, Applications and Demo”, WiBEC Training School, Oslo University Hospital, Oslo, Norway, 17 Oct. 2017.

Donald Y.C. Lie

- Invited by past President of National Chiao-Tung University (NCTU), Taiwan, Prof. C.T. Wu to deliver a talk on Dec. 28-29, 2017 titled “Low-Power Wireless Biosensors with Artificial Intelligence (AI) – some examples of their clinical relevance and applications” at the BETRC Center (Biomedical Electronics Translational Research Center and Biomimetic Systems Research Center). Arranged by Prof. Chung-Chih Hung <https://betrc.nctu.edu.tw/event/event-20171229-m.html>
- Invited to visit Brown University, RI. Arranged by COE Dean Prof. Larry Larson, Aug. 8, 2017
- Invited to visit Chiba University on power amplifier and power efficient circuits, arranged by Prof. Hiroo Sekiya, Chiba University, Grad. School of Science and Engineering, Japan, July 9, 2017
- Invited as a speaker for a workshop talk in IEEE IMS Workshop 2017 on my group’s work titled “5G PA Design Challenges and Opportunities”, IEEE IMS Workshop WSA “Digital and Analog Techniques for Power-Efficiency Enhancement in Wireless Transmitters”, RFIC2017, Hawaii, June 4-9, 2017

Edmund Lam

- “Computational ultrafast optical imaging for single-cell inspection and analysis”, invited talk at IS&T Intelligent Robotics and Industrial Applications using Computer Vision, January 2018.
- “Computational imaging and reconstruction in digital holographic microscopy”, invited talk at Biomedical Imaging and Sensing Conference, April 2018.

Ge Tong

- “Example Talk Title”, invited seminar at The University of Manchester, December 2017.
- “Another Example Title”, keynote talk at 3rd International Workshop on Systems Way Better Than the Ones We Have Already, Grantchester, 31 December 2017

Gwee Bah Hwee

- Hanoi National University, Vietnam for IEEE Distinguished Lecture – 8 Nov 2017
- South University of Science and Technology, Shenzhen, China for invited Seminar – 20 Oct 2017
- Hong Kong City University for IEEE Distinguished Lecture – 18 Oct 2017

Pau-Choo (Julia) Chung

- “Deep Learning Networks in Image Analysis: Introduction and Thoughts”, Symposium on Digital Life Technology, Taiwan 2017.

Jun Ohta

- “Optical Measuring and Controlling Biological Functions by Implantable Optoelectronic Devices”, invited talk at International Workshop on Nanodevice Technologies, Hiroshima, Japan, 2018, March.
- “Implantable Microphotonic Device for Brain Imaging and Manipulation”, invited talk at PHOTONICS@SG 2017, Singapore, August 2017.
- “CMOS Image Sensors and Their biomedical Applications”, invited talk at IEEE CAS Seasonal School, 2017 Tutorials on Circuits and Systems, Selected Topics in Power, RF, and Mixed-Signal ICs, Macau, August 2017.

- “A Smart Electrode for Retinal Stimulator with the Large Number of Stimulus Electrodes”, invited talk at The 13th annual Asia Pacific Conference on Vision (APCV), Tainan, Taiwan, July 2017.
- “Optical sensor and interface technologies for implantable biomedical devices”, invited talk at IEEE IWASI2017, Vieste, Italy, June 2017.

6) IEEE Service and other Professional Activities

Benoit Gosselin

- 2012 - present: Member of the Board of Directors, Microsystems Strategic Alliance of Québec
- 2014 - present: Chapter Chair and Founder, IEEE EMB/CAS Quebec Chapter 2014 - present
- 2011 – present: Scientific Advisor, CMC Microsystem, Kingston, ON, Canada (2011 – present)
- External Reviewer, Natural Sciences and Engineering Research Council of Canada (NSERC)
- Member of the Review Committee, Fonds de recherche du Québec - Nature et technologies (FRQNT)

Zhihua Wang

- 2016- present: AdCom Member of the IEEE Solid-State Circuits Society
- 2002- present: Deputy Chair, ASIC Society of Chinese Institute of Communication
- 2001- present: Deputy Chair, Beijing Semiconductor Industries Association
- 1999- present: Deputy Secretary General of Integrated Circuit Society in China Semiconductor Industries Association

Wouter A. Serdijn

- Chair of the IEEE T-BioCAS Steering Committee

Virgilio Valente

- Review Committee Member (RCM) - BIOCAS 2017
- Review Committee Member (RCM) - ISCAS 2018

Timir Datta-Chaudhuri

NON- IEEE Appointments:

- Assistant Professor - Center for Bioelectronic Medicine - Feinstein Institute for Medical Research
- Assistant Professor - Zucker School of Medicine - Hofstra/Northwell
- Assistant Professor - Elmezzi Graduate School of Molecular Medicine – Hofstra/Northwell

Andreas Demosthenous

- 2016 – present: Chair of committee for Darlington and Guillemin-Cauer paper awards

Manuel Delgado-Restituto

- Vice President for Publications of the IEEE Circuits and Systems Society (2015-present)
- Member of the IEEE TAB Periodicals Committee (2018-)
- Member of the TAB/PSPB Products and Services Committee (2018-)
- Scientific Advisor to Spain government (2009-present)
- External reviewer for the Hasler Foundation, Switzerland (2017)
- External reviewer for the Agencia Nacional de Investigación e Innovación de Uruguay (ANII) (2017)
- External reviewer for the Natural Sciences and Engineering Research Council of Canada (NSERC) (2017)

Kea-Tiong Tang

- IEEE Biomedical Circuits and Systems TC, Chair Elect
- IEEE Taipei Chapter Chair

Christoph Posch

- Review Committee Member (RCM) - ISCAS 2018

Matthew Johnston

- Member, Biomedical and Life Science Technical Committee, IEEE Circuits and Systems Society (2017-present)
- Member, Analog Signal Processing Technical Committee, IEEE Circuits and Systems Society (2017-present)

Melpomeni Kalofonou

- Biomedical Circuits & Systems (BIOCAS) Technical Committee Member
- Member of European Association of Medical Oncology (ESMO)
- Journal Reviewer for IEEE TBCAS, IEEE Sensors, IET Electronics Letters, Sensors and Actuators B: Chemical.
- Member of Cancer Engineering Network of Excellence/Cancer Research Centre of Excellence (CRCE), Imperial College London – Representing the Department of Electrical and Electronic Engineering for the Research theme of Cancer Technologies and Innovation in Cancer Diagnostics

Milutin Stanacevic

- ETF BAFA Vice President, Scholarship Awards Program

Mohamad Sawan

- IEEE Life Science Technical Community, Board Member (2015-present)
- IEEE Circuits and Systems Society, Board of Governors Member (2016-present)
- Scientific Advisor to Quebec government (2017-present)

Mohamed Atef

- IEEE P1708 Working Group, Wearable Cuffless Blood Pressure Monitors (EMB/Std Com/WC-BPM) , Member, (Dec. 2017-present)

Ross Walker

- IEEE Solid State Circuits Society (SSCS), Utah Section, Chair (2017–present)
- Reviewed for the 2017 IEEE SENSORS conference
- Reviewed for IEEE Transactions on VLSI Systems (TVLSI)
- Reviewed for IEEE Transactions on Biomedical Circuits and Systems (TBCAS)
- Reviewed for IEEE Transactions on Circuits and Systems (TCAS)

Robert Rieger

- Technical Reviewer for the Polish Executive Government Agency of National Science Centre
- Reviewer for the Engineering and Physical Sciences Research Council (EPSRC), UK
- Reviewer for the German Academic Exchange Council (DAAD)
- Member of the IEEE Technical Committee on Biomedical Circuits and Systems (BioCAS-TC).
- Member of the IEEE VLSI Systems and Applications Technical Committee (VSA-TC).
- Member of the IEEE Technical Committee CAS Education and Outreach (CASEO).

Nicole McFarlane

- IEEE CASS BOG member, (2018-present)

Pedram Mohseni

- IEEE Engineering in Medicine and Biology Society (EMBS) representative to IEEE Sensors Council; 2014 – 2017

Nikolic Konstantin

- Member of the Expert Steering Group for the Royal Society, creating a Perspective on Neural Interface Technologies (2018)

Dai Jiang

- Review committee member for BioCAS 2017 and ISCAS 2018

Donald Y.C. Lie

- TPC (Technical Program Committee) Subcommittee Chair on transmitter circuits for IEEE RFIC Symp.,
- TPC member of IEEE RWS (Radio Wireless Symp.)

- TPC member of IEEE PAWR
- TPC member of IEEE SiRF
- TPC member of IEEE ISCAS
- TPC member of IEEE BIOCAS
- TPC member of IEEE MWSCAS
- TPC member of IEEE ASICON

Edmund Lam

- Chair, OSA Image Sensing and Pattern Recognition Technical Group (2017-present)

Pau-Choo (Julia) Chung

- IEEE CIS, Vice President (2015-present)
- IEEE Tainan Section, Board of Governor (2012-present)

Gwee Bah Hwee

- Vice Chair - CAS Singapore Chapter
- DSP TC Secretary

Jun Ohta

- IEEE SSCS Distinguished Lecturer (2018-present)
- Executive Committee Member of IEEJpn E Section (2016-present)

7) Organizers: Conferences, Workshops, Panels, Special Sessions, Tutorials

Wouter A. Serdijn

- ISCAS 2018 CASS Transactions Track Co-Chair
- BioCAS 2018 Tutorials Co-Chair

Benoit Gosselin

- General Chair of the IEEE International Conference on Great Things to Come ICGTC 2017
- Member of the Technical Committee for the IEEE ICABC conference (2004-present)
- Member of the Programme Committee for the IEEE ICDEF conference (2005-present)

Andreas Demosthenous

- Member of the Technical Committee for the ESSCIRC (2008 – present)
- Member of the Technical Committee for the ISSCC Student Preview Track (2013 – present)

Manuel Delgado-Restituto

- General Co-Chair of the SPIE Bio-MEMS and Medical Microdevices (2016-2017)
- Member of the Technical Committee for the IEEE ICECS conference (2013-present)
- Member of the Technical Committee for the IEEE PRIME conference (2011-present)
- Review Committee member for the IEEE BioCAS conference (2011-present)
- Review Committee member for the IEEE DCIS conference (2015-present)

Kea-Tiong Tang

- Member of the Technical Committee for the IEEE ISCAS conference (2011-present)
- Member of the Technical Committee for the IEEE BioCAS conference (2012-present)
- **Technical Program Chair**, IEEE International Conference on Electron Devices and Solid-State Circuits (EDSSC), 2017.
- Member of the Technical Committee for the IEEE VLSI-DAT conference (2017-present)
- **Technical Program Committee**, IEEE Life Sciences Conference (LSC), 2017, Tutorial co-Chair (2018).
- **Technical Program Committee**, IEEE NEWCAS 2018.
- **General Vice Co-Chair**, Taiwan and Japan Conference on Circuits and Systems (TJCAS), 2018.

Christoph Posch

- Member Advisory Committee IS Auto Europe 2018, Munich, April 2018

Sameer Sonkusale

- Tutorials Chair, IEEE Biomedical Circuits and Systems Conference, 2017
- Social Media Chair, IEEE International Conference on Circuits and Systems, 2017

- Publications Chair, IEEE Midwest Symposium on Circuits and Systems, 2017

Matthew Johnston

- RCM, IEEE ISCAS 2018
- RCM, IEEE MWSCAS 2017
- Session Co-Chair, Analog Circuits, IEEE MWSCAS 2017
- TPC, IEEE ICECS 2018

Melpomeni Kalofonou

- Review Committee Member for IEEE BIOCAS 2017, IEEE ISCAS 2018

Milutin Stanacevic

- Organizer of a special session on "Circuits and Systems for Autonomous IoT Devices", ACM Great Lakes Symposium on VLSI (GLSVLSI), Chicago, IL, 2018.
- Organizer of a special session on "Energy-Efficient and Secure IoT", IEEE Int. Symp. Circuits and Systems Conference (ISCAS), Baltimore, MD, 2017.

Mohamad Sawan

- IEEE NEWCAS, Strasbourg, France, General Co-Chair
- IEEE ICM, General Co-Chair, Beirut, Lebanon
- IEEE LSC, TPC Co-Chair, Sydney, Australia

Mohamed Atef

- Member of the Technical Committee for IEEE International Symposium on Circuits & Systems (ISCAS 2018).
- Member of the Technical Committee for the 25th IEEE International Conference on Electronics Circuits and Systems (ICECS 2018).
- Member of the Advisory Committee for the 2nd International Conference on Communication and Electronics Systems (ICCES 2017).
- Member of the Technical Committee for the 13th IEEE BioMedical Circuits and Systems (BioCAS 2017).

Ross Walker

- Review Committee Member, 2017 Biomedical Circuits and Systems Conference (BioCAS)
- Session Chair, Biotechnology and Biomedical Technologies, Emerging Technologies: Communications, Microsystems, Optoelectronics, Sensors (ET CMOS), Whistler, BC, CA, May 2018.

Robert Rieger

- Organizing Committee Member for The International Workshop for B4G/5G Mobile Broadband Communications, Taiwan, December 2017

Nicole McFarlane

- Review Committee Member ISCAS 2018
- Member of Technical Program Committee MWSCAS 2017

Pedram Mohseni

- Session Organizer, Wearable Microelectronic Circuits and Systems, IEEE Int. Symp. Circ. Syst. (ISCAS), Florence, Italy, May 27-30, 2018
- Session Chair, Advanced Biomedical Systems, IEEE Int. Solid State Circ. Conf. (ISSCC), San Francisco, CA, February 11-15, 2018
- Technical Program Committee Member, Imagers, MEMS, Medical & Display (IMMD) Subcommittee, IEEE Int. Solid State Circuits Conf. (ISSCC;) 2017 – Present
- Technical Program Committee Co-Chair, IEEE Biomedical Circuits and Systems (BioCAS) Conf., Turin, Italy, October 19-21, 2017

Nikolic Konstantin

- Associated partner for European Masters Programme in Biomedical Engineering – lead: Groningen, other partners: Ghent, RWTH Aachen, Trinity College Dublin, Vrije Universiteit Brussels, Technical University Prague (2017-present)
- Member of the European Foundation on Educating Students in Engineering and Medicine (ESEM, 2017-present)

Paul Sotiriadis

- ISCAS 2018 Special Session "Digitally Intensive RF and Baseband Signal Generation and Processing Architectures Targeting Internet of Things Applications"
- Technical Program Committee member of ICECS 2018
- Technical Program Committee member of MOCAS 2018
- Technical Program Committee member of SBCCI 2017
- Technical Program Committee member of NGCAS 2017
- Technical Program Committee member of MobiHealth 2017
- Technical Program Committee member of SPIN 2017

Donald Y.C. Lie

- General Chair of IEEE VLSI-DAT 2017; Advisory committee member 2018
- OCM (organizing committee member) of the Global Summit on Clinical Research & Biomarkers Conference, Aug. 2017,
- Executive/Steering Committees of IEEE RFIC Symp.,
- Executive/Steering Committees of IEEE SiRF
- Executive/Steering Committees of IEEE MWSCAS,
- Executive/Steering Committees of IEEE TSWMCS (Texas Wireless Symp.)

Edmund Lam

- Co-Chair of the SPIE conference on High-Speed Biomedical Imaging and Spectroscopy: Toward Big Data Instrumentation and Management (2017)

Ge Tong

- Publication co-Chair, the IEEE International Conference on Digital Signal Processing 2018 (DSP 2018)

Pau-Choo (Julia) Chung

- Trends and Controversy Co-Chair of the 4th International Conference on Data Science and Advanced Analytics 2017

8) Editorial Services

Benoit Gosselin

- Associate Editor, IEEE Transactions on Biomedical Circuits and Systems (2016 – present)

Zhihua Wang

- Associate Editor of IEEE Transactions on Neuromorphic Circuits and Systems (2016 – present)
- Guest Editor for IEEE TCAS-1 Special Issue on "ISCAS 2018"

Wouter A. Serdijn

- Associate Editor IEEE T-BioCAS

Timir Datta-Chaudhuri

- Associate Editor – Bioelectronic Medicine (Springer Nature) (2018)

Andreas Demosthenous

- Editor in Chief of the IEEE Transactions on Circuits and Systems I: Regular Papers (2016 – present)
- Associate Editor for the IEEE Transactions on Biomedical Circuits and Systems (2014 – present)

Manuel Delgado-Restituto

- Associate Editor of IEEE Transactions on Biomedical Circuits and Systems (2018-)
- Guest Editor of the TBioCAS Special Issue on Selected Papers from IEEE BioCAS 2016, Vol.11(6), 2017

Kea-Tiong Tang

- Associate Editor of IEEE Transactions on Biomedical Circuits and Systems (2014 – present)

Christoph Posch

- Review Editor, Frontiers in Neuromorphic Engineering

Sameer Sonkusale

- Scientific Reports (Nature Publishing Group)
- IEEE Transactions of Biomedical Circuits and Systems
- IET Electronic Letters

Melpomeni Kalofonou

- Guest Editor for Special Issue of IEEE Transactions on Biomedical Circuits and Systems journal (TBioCAS) on ISCAS 2017

Milutin Stanacevic

- Associate Editor, Int. Conf. of the IEEE Engineering in Medicine and Biology Society (EMBC)

Mohamad Sawan

- EIC, IEEE TBioCAS (2016-present)
- AE, IEEE TBME (2015-present)
- AE, Int Journal on Circuit Theory and Applications (2014-present)

Robert Rieger

- Associate Editor for IEEE Transactions on Biomedical Circuits & Systems (TBCAS)
- Associate Editor for IEEE Transactions on Circuits and Systems I - Regular Papers (TCAS-I)

Pedram Mohseni

- IEEE Solid-State Circuits Letters; 2017 – Present
- IEEE Transactions on Neural Systems and Rehabilitation Engineering; 2012 – Present
- IEEE Transactions on Biomedical Circuits and Systems; 2008 – Present

Nikolic Konstantin

- Editorial Review board member Frontiers in Neuroscience, section Neuromorphic Engineering (2014-present)
- Editor of the Sensors Transformation map for the World Economic Forum (2016-present)

Paul Sotiriadis

- Associate Editor, IEEE Sensors Journal
- Associate Editor, IEEE Transactions on Circuits and Systems - I

Donald Y.C. Lie

- Associate Editor, IEEE Microwave and Wireless Components Letters, 2010-2017 (MWCL; impact factor 2.236 to 2.7)
- Guest Editor, Biosensors, Special Issue "Latest Wearable Biosensors" (ISSN 2079-6374; MDPI), 2016-present (IF:2.83)
- Member of Editorial Board, Biosensors, (ISSN 2079-6374; MDPI), 2017-present (IF; 2.83)
- Guest Editor, Wireless Communications and Mobile Computing, Hindawi and Wiley, Special Issue "RF Front-End Circuits and Architectures for IoT/LTE-A/5G Connectivity" 2017-present (IF:1.899)
- Guest Editor, Special Issue of IEEE RFIC Symp. 2016, IEEE Transaction on Microwave Theory and Techniques, 2017
- Associate Editor-in-Chief, Open Journal of Applied Biosensor (OJAB), Scientific Research Publishing Inc., 2012-present
- International Interdisciplinary Advisory and Editorial Board (IIAEB), International Journal of Interdisciplinary Research and Innovation (IJIRI), Research Publish Journals, 2014-Present

Edmund Lam

- Associate Editor of IEEE Transactions on Biomedical Circuits and Systems
- Senior Area Editor of IEEE Signal Processing Letters

Gwee Bah Hwee

- Guest Editor - Special Issue of IEEE Transactions on Circuits and Systems-II on IEEE ISICAS

Jun Ohta

- Associate Editor of IEEE Sensors Journal (2015 –2017)
- Associate Editor of IEEE TBCAS (2018 –present)
- Guest Editor for IEEE TBCAS Special Issue on “IEEE BioCAS 2016” December 2017

Pau-Choo (Julia) Chung

- Associate Editor of IEEE Transactions on Biomedical Circuits and Systems (2017 – present)

9) Awards, Honors, Patents

Benoit Gosselin

- 2018 Brockhouse Canada Prize
The Brockhouse Canada Prize for Interdisciplinary Research in Science and Engineering recognizes outstanding Canadian teams of researchers from different disciplines who have combined their expertise to produce achievements of outstanding international significance in the natural sciences and engineering in the last six years
- Franklin V. Taylor Memorial Award for the best paper and best oral presentation at the 2017 IEEE International Conference on Systems, man and cybernetics Conference
- Best live demo (Under graduate), ReSMiQ Innovation Day 2017
- Best live demo (Graduate, 1st place), ReSMiQ Innovation Day 2017
- Best live demo (Graduate, 2nd place), ReSMiQ Innovation Day 2017
- IEEE CAS Special Design Award, ReSMiQ Innovation Day 2017
- Brian L. Barge Award for Excellence in Microsystems Integration, TEXPO/CMC Microsystems
- 2017 Best live demo, IEEE International Symposium on Circuits and Systems 2017

Wouter A. Serdijn

- University College London, Visiting Honorary Professor
- Cees Jeroen BES, Wouter Anton SERDIJN, Reza LOTFI: Analogue to digital data converter, Patent, Application number: WO2017NL50061 20170201, Priority number: NL20162016216 20160203, Publication Date: 10.08.2017.

Andreas Demosthenous

- Elevated to IEEE Fellow “for contributions to integrated circuits for active medical devices”

Kea-Tiong Tang

- Superior Award, the 17th Golden Silicon Award
- **Best paper**, Ting-I Chou et al, “A Low-power E-Nose Chip for Rapid Chronic Obstructive Pulmonary Disease Diagnosis”, Symposium of Engineering, Medical, and Biology Applications (SEMBA), 2017.
- **Best paper**, De-Ming Wong et al, “Development of an Electronic Nose Based Breath Detection Method for Lung Cancer Identification”, 4th IEEE International Conference on Applied System Innovation 2018. (IEEE ICASI 2018).
- **Best paper**, Chen-Yu Fang et al, “A fast gas concentration estimation method based on metal-oxide-semiconductor gas sensors”, 4th IEEE International Conference on Applied System Innovation 2018. (IEEE ICASI 2018).

Melpomeni Kalofonou

- Cancer Research UK Multidisciplinary Award
- EPSRC Impact Acceleration Award

Milutin Stanacevic

- E. Salman, M. Stanaćević, T. Wan, Y. Karimi, “Radio Frequency Energy Harvesting Apparatus and Method for Utilizing the Same,” US Patent Pending

Ross Walker

- 2017 Outstanding Teaching Award, Univ. of Utah, Dept. of Electrical and Computer Engineering

Robert Rieger

- Professor and Chair of Networked Electronic Systems at The University of Kiel, Germany, since March 2018

Christoph Posch

- ISSCC 2018 Technology Innovation Award
- Pixel cell circuit and implant, D Matolin, C Posch, BR Benosman - US Patent App. 15/566,408, 2018
- Dynamic, single photodiode pixel circuit and operating method thereof, D Matolin, C Posch - US Patent App. 15/827,422, 2018

Nicole McFarlane

- Elevated to senior member

Nikolic Konstantin

- I2MOVE – Intelligent Implantable Modulator of Vagus Nerve function for treatment of Obesity – grant extension (ERC synergy grant, 1/Apr/2018-30/Nov/2018, £476,749)
- “Prometheus: Modelling as a Service”, cloud computing portal for Computational Neuroscience and Optogenetics, <http://try.projectpyrho.org/>

Dag T. Wisland

- ISSCC 2018 Technology Innovation Award for “Xethru X4 UWB radar sensor”

Donald Y.C. Lie

- ***Best Poster Paper Award Winner***: "Downstream Signaling Cascades for EGFR (Epidermal Growth Factor Receptor) Mutations: The Biomarkers of Acquired Resistance Under Tyrosine-Kinase Inhibitors (TKI) Treatment for Non-Small Cell Lung Cancer (NSCLC)", P.E. Lie, T.Q. Nguyen, **D.Y.C. Lie** and L. Tijani, International Conference & Expo on HIV & AIDS and Global Summit on Clinical Research & Biomarkers Conference, Aug. 21-23, Dallas, TX, USA (2017)

Edmund Lam

- Fellow, Society for Imaging Science and Technology (IS&T)

Ge Tong

- Darlington Best Paper Award, J. Zhou, T. Ge, and J. S. Chang, “Printed Electronics: Effects of Bending and a Self-Compensation Means,” IEEE Trans. Circuits Syst. I, Reg. Papers, Oct 2016

Gwee Bah Hwee

- IEEE DL 2017/18

Jun Ohta

- IEICE Japan Electronics Society Activity Testimonial (March 2018)

Pau-Choo (Julia) Chung

- Intelligent Wearable Outfit And External Information Platform and Computer Program Product In Conjunction With The Intelligent Wearable Outfit, US Patent App. 15/175,342

10) Publications

10.1 Journals

Benoit Gosselin

- M.N. Khiarak, C. Bories, S. Martel, Y. De Koninck and **B. Gosselin**, “A High-Sensitivity CMOS Biophotometry Sensor With Embedded Continuous-Time Sigma-Delta Modulation,” *IEEE Transactions on Biomedical Circuits and Systems* - **Selected paper for ISCAS 2017 Special Issue**, pp. 14, doi: 10.1109/TBCAS.2018.2817200. [Group leader, 50%]
- C. L. Fall, F. Quevillon, M. Blouin, S. Latour, C. Bérubé, A. Campeau-Lecours, C. Gosselin, and **B. Gosselin**, “A Multimodal Adaptive Wireless Control Interface for People with Upper-Body

Disabilities,” *IEEE Transactions on Biomedical Circuits and Systems* - **Selected paper for ISCAS 2017 Special Issue**, pp. 11, doi: 10.1109/TBCAS.2018.2810256. [Group leader, 50%]

- M Rezaei, E Maghsoudloo, C Bories, Y De Koninck and **B Gosselin**, “A Low-Power Current-Reuse Analog Front-End for High-Density Neural Recording Implants,” *IEEE Transactions on Biomedical Circuits and Systems*, vol. 2, no. 2, pp. 271-280, 2018. [Group leader, 50%]

Zhijia Wang

- Zhaoyang Weng; Hanjun Jiang; Jingjing Dong; Yang Li; Jingyi Zheng; Yiyu Shen; Fule Li; Woogeun Rhee; Zhijia Wang, 400-MHz/2.4-GHz Combo WPAN Transceiver IC for Simultaneous Dual-Band Communication With One Single Antenna, *IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS I: REGULAR PAPERS*, 2017, Vol.PP(99), pp. 1 - 13, 28 JUL 2017
- Xican Chen, Yiyu Shen, Zhicheng Wang, Woogeun Rhee, Zhijia Wang, 17 mW 3-to-5 GHz Duty-Cycled Vital Sign Detection Radar Transceiver With Frequency Hopping and Time-Domain Oversampling, *IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS I-REGULAR PAPERS*, Vol.64(4), pp. 969-980, APR 2017
- Shaojie Su, Yixin Zhou, Zhijia Wang, Hong Chen, Monocular Vision-and IMU-Based System for Prosthesis Pose Estimation During Total Hip Replacement Surgery, *IEEE TRANSACTIONS ON BIOMEDICAL CIRCUITS AND SYSTEMS*, Vol.11(3), pp. 661-670, JUN 2017

Wouter A. Serdijn

- Samprajani Rout and Wouter Serdijn: High-Pass $\Sigma\Delta$ Converter Design Using a State-Space Approach and Its Application to Cardiac Signal Acquisition, *IEEE Transactions on Biomedical Circuits and Systems*, 7 May 2018, DOI: 10.1109/TBCAS.2018.2817926.
- Milad Zamani, Yasser Rezaeiyan, Omid Shoaei and Wouter A. Serdijn: A 1.55 μ W Bio-Impedance Measurement System for Implantable Cardiac Pacemakers in 0.18 μ m CMOS, *IEEE Transactions on Biomedical Circuits and Systems*, 8 January 2018, DOI: 10.1109/TBCAS.2017.2776528.

Virgilio Valente

- M. Schormans, V. Valente and A. Demosthenous , “A Low-Power, Wireless, Capacitive Sensing Frontend Based on a Self-Oscillating Inductive Link”, in *IEEE Transactions on Circuits and Systems I: Regular Papers*. (2018) doi: 10.1109/TCSI.2018.2835148

Timir Datta-Chaudhuri

- Selective electrical stimulation of vagus nerve induces specific cytokine response (In preparation – Bioelec. Med.)

Andreas Demosthenous

- J. Lota, S. Sun, T. S. Rappaport, and Demosthenous, “5G Uniform linear arrays with beamforming and spatial multiplexing at 28 GHz, 37 GHz, 64 GHz and 71 GHz for outdoor urban communication: A two-level approach,” *IEEE Transactions on Vehicular Technology*, vol. 66, no. 11, pp. 9972–9985, Nov. 2017.
- A. Mohammed, M. Zamani, R. Bayford, and A. Demosthenous, “Towards on-demand deep brain stimulation using online Parkinson’s disease prediction driven by dynamic detection,” *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, vol. 25, no. 12, pp. 2441–2452, Dec. 2017.
- A. Nasrollahy Shiraz, B. Leaker, C. A. Mosse, E. Solomon, M. Craggs, and A. Demosthenous, “Design of sEMG assembly to detect external anal sphincter activity: a proof of concept,” *Physiological Measurement*, vol. 38, no. 11, pp. L17–L27, Oct 2017.

Kea-Tiong Tang

- Chih-Hong Li, Ting-I Chou, Shih-Wen Chiu and Kea-Tiong Tang, “A 0.7 V Capacitance-to-Digital Converter for Interdigitated Electrode Capacitive Vapor Sensors”, *2017 First New Generation of Circuits and Systems (2017 NGCAS)*. (EI) **Best paper**
- Hung-Yi Hsieh, Ping-Yi Li and Kea-Tiong Tang, “A High Learning Capability Probabilistic Spiking Neural Network Chip”, *2018 International Symposium on VLSI Design, Automation & Test (2018 VLSI-DAT)*. (EI) **Best paper candidate**.

Manuel Delgado-Restituto

- Manuel Delgado-Restituto, James B. Romaine, Juan A. Leñero, Ángel Rodríguez-Vázquez “Real-time phase correlation based integrated system for seizure detection,” *Bio-MEMS and Medical Microdevices*, Proceedings of SPIE Vol. 10247 (SPIE, Bellingham, WA, 2017)
- M. Delgado-Restituto, A. Rodríguez-Pérez, A. Darie, C. Soto-Sanchez, E. Fernández-Jover and A. Rodríguez-Vázquez, System-level design of a 64-channel low power neural spike recording sensor. *IEEE Transactions on Biomedical Circuits and Systems* Vol11(2), pp. 420 – 433, April 2017.

Sameer Sonkusale

- Meera Punjiya, Chung Hee Moon, Zimple Matharu, Hojat Rezaei Nejad and Sameer Sonkusale, “A three-dimensional paper-based analytical device for low cost diagnostics”, **Analyst**, 143, pp.1059-1064, 2018.
- Guoqing Fu and Sameer Sonkusale, “ A CMOS Luminescence Lifetime and Intensity Dual Sensor based on multicycle charge modulation”, **IEEE Transactions on Biomedical Circuits and Systems**, accepted, appears online
- H. Rezaei, A. Sadeqi, G. Kiaee and S. Sonkusale, “Low cost cleanroom-free fabrication of microneedles”, **Nature Microsystems and Nanoengineering**, 4, 17073, 2018.
- Pooria Mostafalu, Gita Kiaee, Giorgio Giatsidis, Akbar Khalilpour, Mahboobeh Nabavinia, Mehmet R Dokmeci, Sameer Sonkusale, Dennis P Orgill, Ali Tamayol, Ali Khademhosseini”, “ A Textile dressing for temporal and dosage controlled drug delivery”, **Advanced Functional Materials**, 27, 1702399, 2017.

Matthew Johnston

- S. Bose, H. Ouh, S. Sengupta, and M.L. Johnston, “Parametric study of p-n junctions and structures for CMOS-integrated single-photon avalanche diodes,” *IEEE Sensors Journal* (2018), In Press.
- M. Lindsay, K. Bishop, S. Sengupta, M. Co, C-H. Chen, M. Cumbie, and M.L. Johnston, “Heterogeneous integration of CMOS sensors and fluidic networks using wafer-level molding,” *IEEE Transactions on Biomedical Circuits and Systems* (2018), In Press. [Invited]

Melpomeni Kalofonou

- D. Ma, J. Rodriguez-Manzano, S. de Mateo, M. Kalofonou, P. Georgiou, C. Toumazou, “Adapting ISFETs for epigenetics: an overview,” *IEEE Transactions of Biomedical Circuits and Systems*, 2018.
- F.-I.D. Dimitrakopoulos, A.G. Antonacopoulou, A.E. Kottorou, S. Maroussi, N. Panagopoulos, I. Koukourikou, C. Scopa, M. Kalofonou, A. Koutras, T. Makatsoris, H. Papadaki, D. Dougenis, M. Brock, H.P. Kalofonos, “NF-kB2 Genetic Variations are Significantly Associated with Non-Small Cell Lung Cancer Risk and Overall Survival,” *Scientific Reports*, vol. 8, no. 1, 2018. DOI: 10.1038/s41598-018-23324-3
- M. Khwaja, M. Kalofonou, C. Toumazou, “A Deep Belief Network for prediction of DNA methylation,” *IEEE Biomedical Circuits and Systems Conference (BioCAS)*, 2017. DOI: 10.1109/BIOCAS.2017.8325078

Milutin Stanacevic

- A. Khalifa, Y. Karimi, Q. Wang, S. Garikapati, W. Montlouis, M. Stanačević, N. Thakor and R. Etienne- Cummings, "The Microbead: A Highly Minituarized Wirellesly Powered Implantable Neural Stimulating System," IEEE Trans. Biomedical Circuits and Systems, 2018.
- J. Ryoo, J. Jian, A. Athalye, S. Das and M. Stanačević, "Design and Evaluation of BTTN A Backscattering Tag-to-Tag Network," IEEE Internet of Things Journal, 2018.

Mohamad Sawan

- NAJARPOUR-FAROUSHANI, A., PACK, C., SAWAN, M., "Cortical visual prostheses: from microstimulation to functional percept," IOP Science, Journal of Neural Engineering, Vol. 15, No. 2, 2018.
- HASANUZZAMAN, M., MOLTAGH, B., HASSAN, A., MOUNAIM, F., RAUT, R., SAWAN, M., "Toward an Energy-Efficient High-Voltage Compliant Visual Intracortical Multichannel Stimulator", IEEE Trans. on VLSI, Vol. 26, No. 5, 2018, pp. 878-891.
- BOU ASSI, E., NGUYEN, D.K., RIHANA, S., SAWAN, M., "Towards Accurate Prediction of Epileptic Seizures: A Review", Elsevier Biomedical Signal Processing and Control, Vol. 34, 2017, pp. 144-157.

Mohamed Atef

- Mohamed Atef, Min Wang, Guoxing Wang, A Fully Integrated High-Sensitivity Wide Dynamic Range PPG Sensor With an Integrated Photodiode and an Automatic Dimming Control LED Driver, IEEE Sensors Journal , vol.18, no.2, pp. 652 – 659, 2018.

Ross Walker

- C. Gupta, R.M. Walker, S. Chang, S.R. Fischer, M. Seal, B. Murmann, R.T. Howe, "Quantum tunneling currents in a nanoengineered electrochemical system," The Journal of Physical Chemistry C, vol. 121, pp. 15085–15105, 2017.

Robert Rieger

- R. Rieger, M. Rif'an, *Integrated ExG, Vibration and Temperature Measurement Front-End for Wearable Sensing*, IEEE Transactions on Circuits and Systems I – Regular Papers, in press, December 2018.
- R. Rieger, N. Sulistiyanto, *Integrated Circuit for Superregenerative Low-Frequency Amplification*, IEEE Transactions on Circuits and Systems II: Express Briefs, Vol. 65, no.1, pp. 31–35, January 2018.
- C. Clarke, R. Rieger, M. Schuettler, N. Donaldson, J. Taylor, *An Implantable ENG Detector with In-System Velocity Selective Recording (VSR) Capability*, Medical & Biological Engineering & Computing, Vol. 55, no. 6, pp 885–895, June 2017.

Christoph Posch

- Ralf Hornig, Marcus Dapper, Eric Le Joliff, Robert Hill, Khalid Ishaque, Christoph Posch, Ryad Benosman, Yannick LeMer, José-Alain Sahel, Serge Picaud: "Pixium vision: first clinical results and innovative developments", - Artificial Vision, Springer, 2017
- Francesco Galluppi, Guillaume Chenegros, Didier Pruneau, Nacer Boussahoul, Gilles Cordurié, Charlie Galle, Nicolas Oddo, Xavier Lagorce, Christoph Posch, Proshato Shabestary, Joël Chavas, Ryad Benosman: "Live Demonstration: A Wearable Device for Optogenetic Vision Restoration", International Symposium on Circuits and Systems (ISCAS), 2018 IEEE

Nicole McFarlane

- M. Habib and N. McFarlane, "Breakdown and Optical Response of CMOS Perimeter Gated Single Photon Avalanche Diodes," IET Electronics Letters, vol. 53, no. 19, Sep. 2017

Pedram Mohseni

- R. Erfani, F. Marefat, A. M. Sodagar, and **P. Mohseni**, "Modeling and characterization of capacitive elements with tissue as dielectric material for wireless powering of neural implants," *IEEE Trans. Neural Syst. Rehab. Eng.*, vol. 26, no. 5, pp. 1093-1099, May 2018.

- H. Zamani, H. R. Bahrami, P. Chalwadi, P. A. Garris, and **P. Mohseni**, "C-FSCV: Compressive fast-scan cyclic voltammetry for brain dopamine recording," *IEEE Trans. Neural Syst. Rehab. Eng.*, vol. 26, no. 1, pp. 51-59, January 2018.
- D. Maji, M. A. Suster, E. Kucukal, U. D. S. Sekhon, A. Sen Gupta, U. A. Gurkan, E. X. Stavrou, and **P. Mohseni**, "ClotChip: A microfluidic dielectric sensor for point-of-care assessment of hemostasis," *IEEE Trans. Biomed. Circ. Syst.*, vol. 11, no. 6, pp. 1459, 1469, December 2017.

Nikolic Konstantin

- S. Markar, T. Wiggins, S. Antonowicz, S. Chin, A. Romano, K. Nikolic, B. Evans, D. Cunningham, M. Muchal, J. Lagergren and G. Hanna: "Non-Invasive Exhaled Breath Volatile Organic Compound Analysis for the Diagnosis of Oesophago-Gastric Cancer; Multi-Centre Validation Study", *JAMA Oncology*, 2018, accepted. (IF=16.6)
- K. B. Mirza, A. Alenda, A. Eftekhar, N. Grossman, K. Nikolic, S. R. Bloom, and C. Toumazou. "Influence of Cholecystokinin-8 on Compound Nerve Action Potentials from Ventral Gastric Vagus in Rats," *International Journal of Neural Systems*, vol. 28, p.1850006 (17 pages), 2018. (IF=6.3)
- S. Jarvis, K. Nikolic and S.R. Schultz: "Neuronal gain modulability is determined by dendritic morphology: a computational optogenetic study", *PLoS Computational Biology* vol. 14, no. 3, p. e1006027 (21p), 2018. (IF=4.5)

Dai Jiang

- M. Zamani, D. Jiang and A. Demosthenous, "An Adaptive Neural Spike Processor With Embedded Active Learning for Improved Unsupervised Sorting Accuracy," in *IEEE Transactions on Biomedical Circuits and Systems*, Accepted
- D. Jiang and A. Demosthenous, "A Multichannel High-Frequency Power-Isolated Neural Stimulator With Crosstalk Reduction," in *IEEE Transactions on Biomedical Circuits and Systems*, Accepted

Dag T. Wisland

- N. Andersen, K. Granhaug, J.A. Michaelsen, S. Bagga, H.A. Hjortland, M.R. Knutsen, T.S. Lande, and D.T. Wisland, "A 118-mW Pulse-Based Radar SoC in 55-nm CMOS for Non-Contact Human Vital Signs Detection," in *IEEE Journal of Solid-State Circuits*, vol. 52, no. 12, pp. 3421-3433, Dec. 2017. DOI: 10.1109/JSSC.2017.2764051. **{Fully self-contained UWB radar SoC for non-contact vital signs detection}**

Donald Y.C. Lie

- T. Hall, D.Y.C. Lie, T.Q. Nguyen, J.C. Mayeda, P.E. Lie, J. Lopez and R.E. Banister, "Non-Contact Sensor for Long-Term Continuous Vital Signs Monitoring: A Review on Intelligent Phased-Array Doppler Sensor Design", *Sensors* 2017, 17, 2632; (<http://www.mdpi.com/1424-8220/17/11/2632/html>) (IF: 2.677)
- D.Y.C. Lie, B.T. Nukala, J. Tsay, J. Lopez and T.Q. Nguyen, "Wireless Power Transfer (WPT) Using Strongly Coupled Magnetic Resonance (SCMR) at 5.8 GHz for Biosensors Applications : A Feasibility Study by Electromagnetic (EM) Simulations", *International Journal of Biosensors & Bioelectronics (IJBSBE)*, 2(2): 2017

Edmund Lam

- Zhenbo Ren, Zhimin Xu, and Edmund Y. Lam, "Learning-based nonparametric autofocusing for digital holography," *Optica*, vol. 5, no. 4, pp. 337–344, April 2018.
- Chul Lee and Edmund Y. Lam, "Computationally efficient brightness compensation and contrast enhancement for transmissive liquid crystal displays," *Journal of Real-Time Image Processing*, vol. 14, no. 4, pp. 733–741, April 2018.
- Jiqiang Kang, Pingping Feng, Xiaoming Wei, Edmund Y. Lam, Kevin K. Tsia, and Kenneth K. Y. Wong, "102-nm, 44.5-MHz inertial-free swept source by mode-locked fiber laser and time stretch technique for optical coherence tomography," *Optics Express*, vol. 26, no. 4, pp. 4370–4381, February 2018.

Ge Tong

- H. He, T. Ge, and J. S. Chang “A 2.5W 40MHz-Bandwidth Hybrid Supply Modulator with 91% Peak Efficiency, 3V Output Swing and 4mV Output Ripple at 3.6V Supply”, *IEEE Trans. Power Electronics*, Accepted, 2018

Jun Ohta

- Wuthibenjaphonchai Nattakarn, Takaaki Ishizu, Makito Haruta, Toshihiko Noda, Kiyotaka Sasagawa, Takashi Tokuda, Mohamad Sawan, Jun Ohta, “CMOS-based Optical Energy Harvesting Circuit for Biomedical and IoT Devices”, *Jpn. J. Appl. Phys.* 57, p. 04FM05, 2018.
- Hiroaki Takehara, Kazutaka Osawa, Makito Haruta, Toshihiko Noda, Kiyotaka Sasagawa, Takashi Tokuda, and Jun Ohta, “On-chip cell analysis platform: Implementation of contact fluorescence microscopy in microfluidic chips”, *AIP Adv.* 7, p. 95213, 2017.
- Jun Ohta, Toshihiko Noda, Kenzo Shodo, Yasuo Terasawa, Makito Haruta, Kiyotaka Sasagawa, Takashi Tokuda, “Stimulator Design of Retinal Prosthesis”, *IEICE Transactions on Electronics*, E100-C, p.523, 2017.

Pau-Choo (Julia) Chung

- Wei-Cheng Wang, Chien-Yu Chiou, Chun-Rong Huang, Pau-Choo Chung, Wei-Yun Huang, “Spatiotemporal Coherence based Annotation Placement for Surveillance Videos”, *IEEE Transactions on Circuits and Systems for Video Technology*, Volume: 28, Issue: 3, March 2018
- Wei-Hsin Wang, Yu-Liang Hsu, Pau-Choo Chung, Ming-Chyi Pai, “Predictive Models for Evaluating Cognitive Ability in Dementia Diagnosis Applications Based on Inertia-and Gait-Related Parameters”, *IEEE Sensors Journal*, 2018

10.2 Conference Proceedings

Benoit Gosselin

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- Ulysse Côté-Allard, Cheikh Latyr Fall, Alexandre Campeau-Lecours, Clément Gosselin, François Laviolette, **Benoit Gosselin** “Transfer learning for sEMG hand gestures recognition using convolutional neural networks,” *IEEE International Conference on Systems, Man, and Cybernetics (SMC)*, 2017, pp. 1663-1668. [Group leader, 25%]
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10.3 Other Publications

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