

Curriculum Vitae (6-page Format)

Jan 2025

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I. ACADEMIC BACKGROUND

<i>Degrees</i>	<i>Institution</i>	<i>Country</i>	<i>Month/Year</i>
Ph.D.	Université de Sherbrooke	Canada	09/1990
M.Sc.A.	Université de Sherbrooke	Canada	12/1986
B.Sc.	Université Laval	Canada	12/1983

II. EMPLOYMENT HISTORY

<i>Position</i>	<i>Dates</i>	<i>Organisation</i>
Emeritus Professor	06-20/...	Electrical Engineering, Polytechnique Montreal
Chair Professor	01-19/...	School of Engineering, Westlake University
Professor	06-98/...	Electrical Engineering, Polytechnique Montreal
Director	06-99/19	ReSMiQ interuniversity research center, Quebec
Adjunct Professor	09-11/...	Electrical & Computer Engineering, Laval University
Advisory Professor	09-06/...	School of Microelectronics, Shanghai University
Adjunct Professor	09-17/...	School of Computer Sciences, Wuhan University
Canada Research Chair	04-01/06-15	Electrical Engineering, Polytechnique Montreal
Director	06-96/05-04	Electronic Division, École Polytechnique
Adjunct Professor	11-95/08-98	Electrical Engineering, McGill University
Associate Professor	06-94/05-98	Electrical & Computer Eng., École Polytechnique
Assistant Professor	09-91/05-94	Electrical & Computer Eng., École Polytechnique
Post-Doctoral Fellow	01-91/08-91	Biomedical Engineering, McGill University

III. HONORS AND AWARDS

2024	Fellow of the International Artificial Intelligence Industry Alliance (AIIA)
2022	Fellow of the Royal Society of Sciences of Canada (FRSC)
2022	Chinese Government Friendship Award;

- 2022 Hangzhou Outstanding Talent Award;
2021 Chinese Zhejiang Weslake Friendship Award
2019 Chinese Hangzhou Qianjiang Friendship Ambassador Award
2019 National High-level Talent Program Award
2018-... Elected Vice-President Publications of the IEEE Circuits and Systems Society;
2016 Recipient of one of the five awards of the Council of the Arab League Ambassadors;
2015 Recipient of the Shanghai City Award for International Collaboration;
2014 Recipient of the Polytechnique Montreal First Research and Innovation Award;
2013 Recipient of the Queen-Elizabeth II Diamond Jubilee Medal;
2013-... Member of the Board of Governors of the IEEE Circuits & Systems Society;
2012 Recipient of the ACFAS - Jacques-Rousseau Award for Multidisciplinarity Research contributions;
2012-... Advisory Professor at Shanghai JiaoTong University, Shanghai, China;
2012 Member of the international selection committee of the biomedical reseacher of the year;
2012 President of the Analog Signal Processing Committee of the IEEE Circuits & Systems Society;
2011-12 Chair of the Distinguished Lecture Program of the IEEE Circuits and Systems Society;
2011-12 Distinguished Lecturer of the IEEE Solid-State Circuits Society;
2010 Recipient of the Desjardins intercultural office achievement Award;
2008 Elected Officer of the National Order of Quebec for outstanding contributions;
2008 Recipient of the Lebanese Embassy in Canada Achievements Award;
2007 Fellow of the Engineering Institute of Canada for contributions to Engineering practices;
2006 Recipient of the American University of Science and Technology Achievements Award;
2006-10 Honorary Professor at Shanghai JiaoTong University, China;
2005 Recipient of the J. A. Bombardier Award for Research innovation and technology transfer;
2005 Medal of Honor from the President of Lebanon for outstanding achievements;
2005-07 Elected President of the BiOCAS technical committee of the IEEE Circuits & Systems Society;
2004 Recipient of the Montreal Lebanese Islamic Center's Award for career achievement;
2004 Fellow of the IEEE for my contributions to implantable medical devices;
2004-06 Elected Distinguished Lecturer of the IEEE Circuits & Systems Society;
2004-... Invited Professor at Université de Metz, France;
2003 Recipient of the Barbara Turnbull Award from the Canadian Institutes of Health Research (CIHR);
2003 Scientific Achievement Award from the American Biographical Institute;
2002 Recipient of the Canadian Islamic Congress's Award for career achievements;
2001-03 Founder and President of Cortivision, a startup company;
2001 Fellow of the Canadian Academy of Engineering;
2001 One of my projects is among the top ten discoveries of the Year by Québec Science Magazine;
2000-... Awarded Canada Research Chair in Smart Medical Devices;
1999 Invited Professor at Université de Sfax, Tunisia.

IV. OTHER AWARDS

- 2020 Best Springer Scientific Reports' journal paper award by Canadian Epilepsy League;
2019 First place demonstration award from IEEE Sensors competition;
2014 Co-recipient of the 1st best paper award from IEEE-SBCCI 2014;
2014 Co-recipient of the 1st place award from MDETEQ State competition;
2013 Co-recipient of the best ReSMiQ Innovation Day Award;
2012 Co-recipient of the best poster presentation at the 11th MIOMD Conference;
2010 Co-recipient of the best Texpo project award from CMC Microsystems annual workshop;
2010 Co-recipient of the best student science and society award from ACFAS 2010;
2010 Co-recipient of the best poster presentation award from ReSMiQ-ACFAS 2010;
2009 Co-recipient of the 2009 Excellence In Technology Award from the Society for Technology in Anesthesia. A Robot Prototype for Intravenous Catheter Placement;
2008 Co-recipient of the Best IEEE Solid-State Society Chapter of the year;
2008 Co-recipient of the 1st best paper award from IEEE NEWCAS 2008;

- 2008 Co-recipient of the 3rd best paper award from IEEE NEWCAS 2008;
2006 Nominated one of best Electrical Engineering Professors of the year at Ecole Polytechnique;
2004 Co-recipient of Myril B. Reed Best Paper Award of the 46th IEEE-MWSCAS.
1997 Award for academic excellence awarded by École Polytechnique de Montréal;
1989 Medal of Merit for academic excellence by the Université de Sherbrooke during my Ph.D. studies.

V. OTHER DISTINCTIONS AND ACHIEVEMENTS

- 2020 General Chair of the IEEE Engineering, Medicine and Biology Society Conference;
2018 General Chair of the IEEE International Life Sciences Conference;
2018-19 General Co-Chair of the IEEE-International AICAS, and ISOCC;
2016 General Chair of the IEEE International Symposium on Circuits and Systems;
2015-... Editor-in-chief of the IEEE Transactions on Biomedical Circuits and Systems Journal;
2015-... General Co-Chair of the IEEE-International SBB;
2013-... Associate Editor of the IEEE Transactions on Biomedical Engineering Journal;
2013-... Chair of the IEEE Biomedical Engineering Award committee;
2012-... General co-Chair of the annual IEEE NEWCAS Conference;
2012-... General co-Chair of the annual IEEE Int'l Conf. on Microelectronics;
2011-... Editorial Board, the IEEE Life Sciences Portal;
2011-... General Chair of the IEEE Int'l Conf. on Electronics, Circuits and Systems;
2011-... General co-Chair of the IEEE Int'l Conf. on Microelectronics;
2011-12 Guest Editor of the IEEE J. of Emerging and Selected Topics SI on Brain-Machine Interfaces;
2011 Member of the Quebec's technology mission to India;
2011 General Chair of the Brain-Computer Interface Workshop (CAS-FEST 2010);
2011 General Co-Chair of the ACFAS-ReSMiQ's Workshop;
2010 Member of the Quebec's technology mission to China;
2010-... Advisory Board, Int'l Symposium on Medical Information and Communication Technology;
2010-13 Deputy Editor-in-Chief of the IEEE Transactions on Circuits and Systems II (TCAS-II);
2010-... Advisor for Springer Publisher in the field of Analog and biomedical books;
2010-... General Chair of the ACFAS-ReSMiQ's Workshop;
2009-... Technical Program Co-Chair of the Int. Biomedical Circuits and Systems (BiOCAS2009);
2009-... Member of the International Editorial Board of the Journal of Healthcare Engineering;
2009 Elected Toronto, Madison and Stanford Who's Who;
2008-... Member of the Editorial Board of the International Journal of Circuit Theory and Applications;
2008-... Member of the NSERC scholarship committee;
2008 Member of the Quebec technology mission to Taiwan;
2007 Member of FRSQ-FQRNT new joint support for R&D medical technology committee;
2007-... Member of the Steering Committee of the IEEE Trans. on Biomedical Circuits and Systems Journal;
2007-14 Associate Editor of the IEEE Transactions on Biomedical Circuits and Systems Journal;
2007 Member of Canada Bio & nanotechnology mission to India;
2007-... Member of the International Advisory Board of the Emirates Journal of Engineering Research (EJER);
2007-... General Chair of the Int. Biomedical Circuits and Systems (BiOCAS2007);
2007-... General Chair of the Int. Midwest Symposium on Circuits and Systems (MWSCAS2007);
2007 Member of the scientific committee of Marseille IMNP institute;
2006-... Member of Prompt Scientific Coordination Committee;
2006 Technical program co-Chair of the Int. Midwest Symposium on CAS (MWSCAS2006);
2006-... General Chair of the IEEE International NEWCAS conference
2006 General Co-Chair of the IEEE Int. Conf. On Electronics, Circuits and Systems (ICECS2006);
2006 Co-Chair of the IEEE Int. Computer Architecture for Machine Perception and Sensors (CAMPS2006);
2005 Member of the Quebec technology mission to China.
2005-07 Member of the International Biotechnology council, IEEE CAS representative;
2005 General Chair of the Int. Functional Electrical Stimulation Society Conference (IFESS2005);
2004-07 Member of the Evaluation Committee of the Institut National de Recherche Scientifique;

- 2004 Editor of the Springer Mixed-signal letters for the Americas;
- 2004-... Member of the Editorial Board of the Journal of Applied Sciences;
- 2004-... Guest Editor of the Kluwer Analog integrated Circuits and Signal Processing Journal;
- 2004-... Member of the Canadian Arthritis Network (Canadian Network of Centre of Excellence);
- 2003-... Member of the Board of Directors of Montreal rehabilitation interdisciplinary research ctr. (CRIR);
- 2003-... Member/Chair of IEEE Technical Program Committee (ISCAS, MWSCAS, ICM, ICSICT, etc);
- 2003-... Investigator of a \$21M Pan-Canadian grant application from CFI to acquire an EDA Laboratory;
- 2003-05 Vice-President of the BiOCAS technical committee of IEEE Circuits & Systems Society;
- 2002-... Founder & general chair of the IEEE International NEWCAS Conference;
- 2002-06 Member of the Board of Directors of the Int. Functional Electrical Stimulation Society (IFESS);
- 2001-... Member of the scientific coordination committee of Victhom Human Bionic;
- 2001-05 Member of the scientific coordination committee of Prompt-Quebec;
- 2001-... Guest Editor of the Kluwer/Springer Analog integrated Circuits and Signal Processing Journal;
- 2000-... Interviews with news media: newspapers, magazines, TV, and radio (prestigious TV reports);
- 2000 Recipient of a major CFI grant (\$8.2M) to establish an advanced microelectronics assembly facility;
- 1999-... Founder and Chair of the IEEE Solid-State Circuits Society (SSCS) Montreal Chapter;
- 1999-... Scientific Advisor to several Canadian companies (Victhom Human Bionic, Scanview, etc);
- 1988-90 Ph.D. scholarship (12k\$/year), FRSQ (Fonds de la Recherche en Santé du Québec).
- 1995-... Co-Founder of the IEEE Int. Conf. on Electronics, Circuits and Systems (ICECS);
- 1994-... Founder and director of the Polystim Neurotechnologies Laboratory;
- 1991-... General Chair / Co-Chair of IEEE Int. Conferences (ICECS, ICM, NewCAS, etc.).

VI. SUMMARY OF RESEARCH CONTRIBUTIONS

Citations: 18150, H-Index: 64

Publications (Summary)	Last 6 years	Total
Refereed Journal publications (published/accepted)	160	388
Refereed conference papers	98	611
Invited talks / Keynote speeches	120	385
Patents (Awarded and Pending)	34	55
Books and book chapters	11	25
Refereed abstracts and posters	23	120
Technical reports count and list are not included in this CV	125	315
Total (Publications)	446	1584

Students and Other Personal Supervision (Appendix D)	Supervised	Completed
Ph.D.	20	68
M.A.Sc.+M.Eng.	0	132
Postdoctoral Fellows, Research assistants and associates, Hosted faculties	17	104
Hosted Invited Faculties	0	11
Undergraduate training R&D projects	0	360
Total (Students and Other Personal)	37	691

Note 1: Samples of recently published papers (see next 2 pages please)

LIST OF RECENT PUBLICATIONS (Jan 2025)
(Refereed Journal Publications: Published and Accepted)

- [388] ZHANG H., HUANG N., BIAN S., **SAWAN M.**, "Platinum Wire-embedded Culturing Device for Interior Recording from Lollipop-shaped Neural Spheroids", Online in the *Cyborg and Bionic Systems Journal*, **2025**.
- [387] YANG X., CHAI C., CHEN Y., **SAWAN M.**, "Skull Impact on Photoacoustic Imaging of Multi-layered Brain Tissues with Embedded Blood Vessel under Different Optical Source Types: Modeling and Simulation", Online in *MDPI Bioengineering Journal*, **2025**.
- [386] ZHAO S., LI S., WU D., TIAN F., YANG J., **SAWAN M.**, "A Resource-Efficient Algorithm-Hardware Co-Design Towards Semi-Supervised Neurological Symptoms Prediction", Online in *IEEE Transactions on Biomedical Circuits and Systems*, **2024**.
- [385] FANG C., SHEN Z., WANG Z., WANG C., ZHAO S., TIAN F., YANG J., **SAWAN M.**, "An Energy-Efficient Unstructured Sparsity-Aware Deep SNN Accelerator with 3D Computation Array", Online in *IEEE Journal of Solid State Circuits*, **2024**.
- [384] SHEN X., ZHANG Z., YANG J., LIU J., WU N., **SAWAN M.**, LIU L., "A 0.0012-mm² 0.66-pJ/bit BPSK Demodulator Incorporating a Loop-Filter-Less PLL Achieving the Maximum Data Rate of $f_{\text{carrier}}/2$ ", Online in *Journal of Semiconductors*, **2024**.
- [383] ZHENG Y., SUN J., MA Y., ZHANG H., CUI Z., PASCHOS G., SONG X., TAO Y., SAVVIDIS P., KONG W., WEN L., BIAN S., and **SAWAN M.**, "High Quality-Factor All-Dielectric Metacavity for Label-free Biosensing", Online in *Advanced Science*, **2024**.
- [382] TIAN F., CHEN J., ZHENG J., WU H., HE J., WANG X., FANG C., YAO Y., YANG J., **SAWAN M.**, TSUI CY., CHENG KT., "BioPI: An Energy Efficient and Low-Latency Neuromorphic Pipelined System with Joint Design Optimizations of Sensor-Algorithm-Processor for Wearable Healthcare", Online in *IEEE Transactions on Circuits and Systems for Artificial Intelligence (TCASAI)*, **2024**.
- [381] SHANG S., XU Y., JIN M., JIANG H., WANG X., WANG X., CHENG Y., WANG M., ZHANG S., JI B., YANG J., WANG G., **SAWAN M.**, "Biocompatible dipeptide coated on Pt/PEDOT: PSS modified silicon probes for tissues rejection alleviation", *Sensors and Actuators B: Chemical*, Vol. 424, **2024**, pp. 136891.
- [380] EL-SAYEGH B., DUMOULIN C., LEDUC-PRIMEAU F., **SAWAN M.**, "Improving Pelvic Floor Muscle Training with AI: A Novel Quality Assessment System for Pelvic Floor Dysfunction", *MDPI Biomedical Sensors*, Vol. 24, No. 21, **2024**, pp. 6937.
- [379] WU D., LI S., YANG J., **SAWAN M.**, "Neuro-BERT: Rethinking Masked Autoencoding for Self-Supervised Neurological Pretraining", *IEEE Journal of Biomedical and Health Informatics*, Online, **2024**.
- [378] MA Z., CHEN C., LIN Y., QI L., LI Y., BI X., **SAWAN M.**, WANG G., ZHAO J., "An Energy-Efficient FD-fNIRS Readout Circuit Employing a Mixer-First Analog Frontend and a Σ - Δ Phase-to-Digital Converter", *IEEE Transactions on Biomedical Circuits and Systems*, Online, **2024**.
- [377] BAO K., YANG X., SUN C., RONG G., TIAN C., Shi J., **SAWAN M.**, LAN L., "Photoacoustic Imaging Sensors Based on Integrated Photonics: Challenges and Trends", *Laser and Photonic Reviews*, Online, **2024**.
- [376] ESKANDARI, R., **SAWAN M.**, "78.8 pJ/b, 100 Mb/s Noncoherent IR-UWB Receiver for Multichannel Neurorecording Implants", *IEEE Transactions on Biomedical Circuits and Systems*, Online, **2024**.
- [375] CHAI C., YANG X., GAO X., SHI J., WANG X., SONG H., CHEN Y., **SAWAN M.**, "Enhancing Photoacoustic Imaging for Lung Diagnostics and BCI Communication: Simulation of Cavity Structures Artifact Generation and Evaluation of Noise Reduction Techniques", *Frontiers in Bioeng. & Biotech.*, Vol. 12, **2024**, pp. 1452865.
- [374] YANG X., CHAI C., CHEN Y., **SAWAN M.**, "Optical Transmission in Single-layer Brain Tissues under Different Optical Source Types: Modelling and Simulation", *Bioengineering Journal*, Vol. 11, No. 9, **2024**, pp. 916.
- [373] AHMAD M., BAHRI M., **SAWAN M.**, "MEMS Micromirror Actuation Techniques: A Comprehensive Review of Trends, Innovations, and Future Prospects", *Micromachines*, Vol. 15, No. 10, **2024**, pp. 1233.

- [372] ZHAO S., WANG C., FANG C., TIAN F., YANG J., **SAWAN M.**, "HybMED: A Hybrid Neural Network Training Processor with Multi-Sparsity Exploitation for Internet of Medical Things", *IEEE Transactions on Biomedical Circuits and Systems*, Vol. 18, No. 5, **2024**, pp. 1178.
- [371] MARVI F., CHEN Y., **SAWAN M.**, "Alzheimer's Disease Diagnosis in the Preclinical Stage: Normal Aging or Dementia", *IEEE Reviews in Biomedical engineering*, On line, **2024**.
- [370] SONG X., TAO Y., BIAN S., **SAWAN M.**, "Optical Biosensing of Monkeypox Virus using Novel Recombinant Silica-Binding Proteins for Site-directed Antibody Immobilization", On line on *Journal of Pharmaceutical Analysis*, **2024**.
- [369] RONG G., KAVOKIN A., **SAWAN M.**, "Optical Biosensor Based on Porous Silicon and Tamm Plasmon Polariton for Detection of CagA Antigen of Helicobacter pylori", *MDPI Sensors Journal*, Vol. 24, No.16, **2024**, pp. 5153.
- [368] SAJJADI S.A., SADROSSADAT S.A., MOFTAKHARZADEH A., NABAVI M., **SAWAN M.**, "Yield Maximization of Flip-Flop Circuits Based on Deep Neural Network and Polyhedral Estimation of Nonlinear Constraints", *IEEE Access Journal*, Vol. 12, **2024**, pp. 113944-113959.
- [367] MARVI F., JAFARI K., **SAWAN M.**, "Grating BioMEMS Platform Architecture for Multiple Biomarkers Detection", *MDPI Biosensors*, Vol. 14, No.8, **2024**, pp. 385.
- [366] KATEBI M., ERFANIAN A., KARAMI M.A., **SAWAN M.**, "Challenges and Trends of Implantable Functional Electrical Neural Stimulators: System Architecture and Parameters", *IEEE Access Journal*, Vol. 12, **2024**, pp. 103203-103236.
- [365] BAHRI M., FREDJ Z., QIN P., **SAWAN M.**, "DNA-Coupled AuNPs@CuMOF for Sensitive Electrochemical Detection of Carcinoembryonic Antigen", *ACS Applied Nano Materials Journal*, Vol. 7, **2024**, pp. 11921–11930.
- [364] SU Y., RONG G., BIAN S., WANG P., LI L., CHEN Y., HUANG C., ZHANG H., **SAWAN M.**, "Dark-Field Resonance Rayleigh Scattering Biosensor to Monitor Small Molecules and Determine the Secretory Ability of Single Neuron", *Advanced Materials Technology*, Vol. 9, **2024**, 2301701.
- [363] BIN HEYAT MB., AKHTAR F., MUNIR F., SULTANA A., MUAAD AY., GUL I., **SAWAN M.**, ASGHAR W., IQPAL SMA., BAIG AA., DE LA TORRE DIEZ I., WU K., "Unravelling the complexities of depression with medical intelligence: exploring the interplay of genetics, hormones, and brain function", *Springer Complex & Intelligent Systems*, Vol. 10, **2024**, pp. 5883-5915.
- [362] XIA F., MAO F., LU Y., **SAWAN M.**, "Optimizing Power Transfer Efficiency in Biomedical Implants: A Comparative Analysis of SS and SP Inductive Link Topologies", *IEEE Transactions on Power Electronics*, Vol. 39, No. 9, **2024**, pp. 11770-11783.
- [361] LI F., LI D., WANG C., LIU G., WANG R., REN H., TANG Y., WANG Y., CHEN Y., LIANG K., HUANG Q., **SAWAN M.**, QIU M., WANG H., ZHU B., "An artificial visual neuron with multiplexed rate and time-to-first-spike coding", *Nature Communications*, Vol. 15, No. 1, **2024**, pp. 3689.
- [360] BIAN S., SHANG M., TAO Y., WANG P., XU Y., WANG Y., SHEN Z., **SAWAN M.**, "Dynamic Profiling and Prediction of Antibody Response to Inactivated Vaccines with Homologous Boosters by Microsample-driven Biosensor and Machine Learning", *MDPI Vaccines*, Vol. 12, No. 4, **2024**, pp. 352.
- [359] ESKANDARI R., **SAWAN M.**, "Challenges and Perspectives on Impulse Radio-Ultra-Wideband Transceivers for Neural Recording Applications", *IEEE Transactions on Biomedical Circuits and Systems*, Vol. 18, No. 2, **2024**, pp. 369-382.
- [358] YANG J., ZHAO S., WANG J., LIN S., HOU Q., **SAWAN M.**, "Precise and Low-power Closed-Loop Neuromodulation through Algorithm-Integrated Circuit Co-Design", *The Frontiers in Neuroscience*, Vol. 18, **2024**, 1340164