

# Curriculum Vitae (6-page Format)

Jan 2023

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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

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 researcher 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 1<sup>st</sup> best paper award from IEEE-SBCCI 2014;
- 2014 Co-recipient of the 1<sup>st</sup> 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 11<sup>th</sup> 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 1<sup>st</sup> best paper award from IEEE NEWCAS 2008;
- 2008 Co-recipient of the 3<sup>rd</sup> 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 46<sup>th</sup> 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 (CAMPSS2006);
- 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: 14133, H-Index: 54 (Jan 2023)*

<b>Publications (Summary)</b>	<b>Last 6 years</b>	<b>Total</b>
Refereed <b>Journal publications</b> (published/accepted) .....	139	<b>329</b>
Refereed <b>conference papers</b> .....	101	<b>575</b>
Invited talks / <b>Keynote</b> speeches .....	116	<b>331</b>
<b>Patents</b> (Awarded and Pending) .....	17	<b>42</b>
<b>Books</b> and book chapters .....	9	<b>24</b>
Refereed abstracts and posters .....	25	<b>115</b>
Technical reports count and list are not included in this CV	125	<b>315</b>
<b>Total (Publications)</b>	<b>407</b>	<b>1416</b>

<b>Students and Other Personal Supervision (Appendix D)</b>	<b>Supervised</b>	<b>Completed</b>
Ph.D.	21	<b>58</b>
M.A.Sc.+M.Eng.	1	<b>131</b>
Postdoctoral Fellows, Research assistants and associates, Hosted faculties	20	<b>93</b>

Hosted Invited Faculties	0	10
Undergraduate training R&D projects	0	349
<b>Total (Students and Other Personal)</b>	<b>42</b>	<b>641</b>

<b>Note 1: Samples of recently published papers (see next 2 pages please)</b>
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**LIST OF RECENT PUBLICATIONS (Jan 2023)**  
(Refereed Journal Publications: Published and Accepted)

- [329] Wang T., CHEN YH., **SAWAN M.**, “Exploring the Role of Visual Guidance in Motor Imagery-based Brain-computer Interface: An EEG Microstate-specific Functional Connectivity Study”, ***MDPI Bioengineering Journal***, Vol 10, No. 3, **2023**, 281.
- [328] CHEN YH., YANG J., BEIER K., WU H., **SAWAN M.**, “Challenges and Future Trends in Wearable Closed-loop Neuromodulation to Efficiently Treat Methamphetamine Addiction”, ***MDPI Frontiers in Psychiatry-Addictive Disorders Journal***, Vol 14, **2023**.
- [327] ESMAEILZADEH M., AUDET Y., ALI M., **SAWAN M.**, “A Wide-range Low-power Thyristor-based Delay Element with Improved Temperature Sensitivity” ***the IEEE Transactions on Circuits and Systems II: Express Briefs***, **2023**. DOI:10.1109/TCSII.2023.3245562
- [326] FREDJ Z., **SAWAN M.**, “Advanced Nanomaterials-based Electrochemical Biosensors for Catecholamines Detection: Challenges and Trends”, Vol 13, No. 2, ***MDPI Biosensors Journal***, **2023**, 211
- [325] WU D., ZHAO S., YANG J., **SAWAN M.**, “Software-hardware Co-design for Energy-efficient Continuous Health Monitoring via Task-aware Compression”, ***IEEE Transactions on Biomedical Circuits and Systems***, **2023**. DOI:10.1109/TBCAS/2023.3238719, pp. 1-12.
- [324] ZHENG Y., SONG X., FREDJ Z., BIAN S., **SAWAN M.**, “Challenges and Perspectives of Multi-virus Biosensing Techniques: A Review”, ***Analytica Chimica Acta Journal***, Vol 1244, **2022**, 340860
- [323] WANG C., FANG C., ZOU Y., YANG J., **SAWAN M.**, “Artificial Intelligence Techniques for Retinal Prostheses: A Comprehensive Review and Future Direction”, ***J. Neural Eng.***, Vol. 20, **2023**, 011003
- [322] TIAN F., YANG J., ZHAO S., **SAWAN M.**, “NeuroCARE: A Generic Neuromorphic Edge Computing Framework for Healthcare Applications”, ***Frontiers Neurosciences Journal***, Vol. 17, **2023**, 1093865
- [321] GAGLIANO L., DING T.Y., TOFFA D. H., BEAUREGARD, L., ROBERT M., LESAGE F., **SAWAN M.**, NGUYEN D.K., BOUASSI, E., “Decrease in wearable-based nocturnal sleep efficiency precedes epileptic seizures”, ***Frontiers in Neurology***, Vol. 13, **2023**, 1089094
- [320] ELSAYEGH B., LEDUC-PRIMEAU F., **SAWAN M.**, DUMOULIN C., “The State of Pelvic Floor Muscle Dynamometry: A Scoping Review”, ***Neurology and Urodynamics***, Vol 42, **2023**, pp. 478-499.
- [319] WU D., SHI Y., WANG Z., YANG J., **SAWAN M.**, “CSP-Net: Joint Compression and Classification Network for Epilepsy Seizure Prediction”, ***IEEE Transactions on Neural Systems and Rehabilitation Engineering***, Vol 31, pp. 841-850, **2023**.
- [318] RONG G., ZHENG Y., LI, X., GUO M., SU Y., BIAN S., DANG B., CHEN Y., ZHANG Y., SHEN L., JIN H., YAN R., ZHU P., WEN L., **SAWAN M.**, “A High-throughput Fully Automatic biosensing platform for efficient COVID-19 detection”, ***Elsevier Biosensors and Bioelectronics Journal***, Vol. 220, 114861, **2023**.

- [317] KARIMI M., ALI M., HASSAN A., BOSTANI R., VAISBAND B., **SAWAN M.**, GOSSELIN B., “A 7.6-ns Delay Subthreshold Level-Shifter Leveraging a Composite Transistor and a Voltage-Controlled Current Source”, **IEEE-ACCESS**, Vol. 10, **2022**, pp. 132432-132447.
- [316] ESMAEILZADEH M., AUDET Y., ALI M., **SAWAN M.**, “A Low–offset VCO–based Time–domain Comparator Using a Phase Frequency Detector with Reduced Dead and Blind Zones”, **IEEE-TCAS-I**, **2022**, pp. 1-13.
- [315] ZHENG W., CHEN Y., **SAWAN M.**, “Longitudinal Data to Enhance Dynamic Stroke Risk Prediction”, **MDPI Healthcare Journal**, Vol. 10, No. 11, **2022**.
- [314] RONG G., ZHENG Y., XI, Y., BAO K., XIA F., REN H., BIAN S., LI L., ZHU B., **SAWAN M.**, “A Closed-loop Approach to Fight Coronavirus: Early Detection and Subsequent Treatment”, **MDPI Biosensors Journal**, Vol. 12, No. 10, **2022**.
- [313] LI M., YE Z.-W., TANG K., GUO L., BI W., ZHANG Y., TANG Y.-D., RONG G., **SAWAN M.**, YIN X., SUN R., YUAN S., DANG B., “Enhanced trimeric ACE2 exhibits potent prophylactic and therapeutic efficacy against the SARS-CoV-2 Delta and Omicron variants in vivo”, **Cell Research**, Vol. 32, No. 6, **2022**, pp. 589-592.
- [312] ELSAYEGH B., ALI M., ASSAF H., **SAWAN M.**, DUMOULIN C., “Portable Dynamometer-Based Measurement of Pelvic Floor Muscle Force”, **IEEE Journal of Translational Engineering in Health & Medicine**, Vol. 11, **2022**, pp. 44-53. DOI: 10.1109/JTEHM.2022.3223258.
- [311] LI H., TROCAN M., **SAWAN M.**, GALAYKO D., “Serial Decoders-Based Autoencoders for Image Reconstruction”, **Applied Sciences Journal**, Vol.12, No. 16, **2022**, 8256.
- [310] KARIMI M., ALI M., HASSAN A., AGHAJANI A., **SAWAN M.**, GOSSELIN B., “A 9.2-ns to 1-us Digitally Controlled Multi-tuned Deadtime Optimization for Efficient GaN HEMT Power Converters”, **IEEE-TCAS-I**, Vol. 69, No. 11, **2022**, pp. 4381-4394.
- [309] WANG J., CHEN Y., YANG J., **SAWAN M.**, “Intelligent Classification Technique of Hand Motor Imagery Using EEG Beta Rebound Follow-up Pattern”, **MDPI, Biosensors**, Vol. 12, No. 6, **2022**, 384
- [308] AZIZIPOUR N., AVAZPOUR R., **SAWAN M.**, ROSENZWEIG D.H., AJJI A., “Uniformity of spheroids-on-a-chip by surface treatment of PDMS microfluidic platforms”, **Sensors & Diagnostics Journal**, Vol. 1, **2022**, pp.750-764.
- [307] SUN S., YANG J., CHEN Y., MIAO J., **SAWAN M.**, “EEG Signals based Internet Addiction Diagnosis Using Convolutional Neural Networks”, **MDPI, Applied Sciences**, Vol. 12, No. 13, **2022**, 6297.
- [306] WU D., YANG J., **SAWAN M.**, “Bridging the Gap Between Patient-Specific and Patient-Independent Seizure Prediction Via Knowledge Distillation”, **J. Neural Eng.**, Vol. 19, No. 3, **2022**.
- [305] TAO Y., BIAN S., WANG P., ZHANG H., BI W., ZHU P., **SAWAN M.**, “Rapid Optical Biosensing of SARS-CoV-2 Spike Proteins in Artificial Samples”, **MDPI Sensors**, Vol. 22, No. 10, **2022**, 3768.
- [304] XU Y., YANG J., **SAWAN M.**, “Multichannel Synthetic Preictal EEG Signals to Enhance the Prediction of Epileptic Seizures”, **IEEE Transactions on Biomedical Engineering**, Online, **2022**, 3171982.
- [303] WANG C., YANG J., **SAWAN M.**, “NeuroSEE: A Neuromorphic Energy Efficient Processing Framework for Visual Prostheses”, **IEEE Journal of Biomedical and Health Informatics, and Featured cover page**, Vol. 26, No. 8, **2022**, pp. 4132-4141.
- [302] AZIZIPOUR N., AVAZPOUR R., **SAWAN M.**, AJJI A., ROSENZWEIG D.H., “Surface optimization and design adaptation toward spheroid formation on-chip”, **MDPI Sensors**, Vol. 22, No. 9, **2022**,3191.