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| **Roman Genov** |
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| The Edward S. Rogers Sr.Department of Electrical and Computer Engineering10 King's College RoadToronto, Ontario M5S 3G4 Canada | *URL*: http://www.eecg.utoronto.ca/~roman*Email*: roman@eecg.utoronto.ca*Phone*: (416) 946-8666*Fax*: (416) 971-2286 |
| RESEARCH INTERESTS  |
|  | Analog integrated circuits and systems for energy-constrained biological, medical, and consumer sensory applications, such as implantable, wearable and disposable sensory microsystems, sensory-edge machine learning accelerators and wireless sensors; applications include brain-chip interfaces, neuro-stimulators, computational image sensors, and molecular biosensors.  |
| EDUCATION  |
|  | **The Johns Hopkins University**, Ph.D., Electrical and Computer Engineering,Baltimore, MD, 8/2002.Dissertation: Massively Parallel Mixed-Signal VLSI Kernel Machines.Advisor: Gert Cauwenberghs**Massachusetts Institute of Technology**, Visiting Student, Cambridge, MA, 1/1999-8/1999.Artificial Intelligence Lab / Center for Biological and Computational Leaning. **The Johns Hopkins University**, M.S.E., Electrical and Computer Engineering, Baltimore, MD, 1998.**Rochester Institute of Technology**, B.S., Electrical Engineering, Rochester,NY, 1996. |
| ACADEMIC AND INDUSTRIAL POSITIONS  |
|  | **University of Toronto,** Toronto, ON, 7/2014-Present.*Professor*, Department of Electrical and Computer Engineering. Electronics Group and Biomedical Engineering Group.**University of Toronto,** Toronto, ON, 7/2008-6/2014.*Associate Professor*, Department of Electrical and Computer Engineering. Electronics Group and Biomedical Engineering Group.**University of Toronto,** Toronto, ON, 9/2002-6/2008.*Assistant Professor*, Department of Electrical and Computer Engineering. Electronics Group and Biomedical Engineering Group.**The Johns Hopkins University**, Baltimore, MD, 9/96-8/2002.*Research Assistant*, Department of Electrical and Computer Engineering.Adaptive Microsystems Laboratory. **Swiss Federal Institute of Technology (EPFL)**, Lausanne, Switzerland, 6/1998-7/1998.*Visiting Researcher*, Autonomous Systems Lab. **Xerox Corporation**, Webster, NY,3/1996-8/1996. *Design Engineer CO-OP*, Advanced Development Team in the Color Imaging Systems Division. **Atmel Corporation**, Columbia, MD, 6/1995-12/1995. *Design Engineer Intern*, Chesapeake Design Center. |
| AWARDS AND HONORS  |
|  | **International** John Bandler Memorial 3MT Award (Best Thesis Pitch, top-3), IEEE International Microwave Symposium, IMS, (with M. Abdolrazzaghi and G. Eleftheriades, ~10,000 attendees), June 2024.Best Poster Award, International Conference on Computational Photography, ICCP, (with K. Kutulakos, 95 accepted posters), 2021.Jack Kilby Award for Outstanding Student Paper, IEEE International Solid-State Circuits Conference, ISSCC (with H. Kassiri, the highest ranked student paper), 2018.Best Paper Award, IEEE Transactions on Biomedical Circuits and Systems, TBioCAS (with R. Shulyzki, the top paper, one paper is selected among all published papers over two years, USD $2000 prize), 2017.Best Paper Award, IEEE International Symposium on Circuits and Systems, ISCAS (with H. Kassiri, the top paper, selected by IEEE Biomedical Circuits and Systems Technical Committee, 1687 submitted papers conference-wide), 2016.Best Paper Award, IEEE Biomedical Circuits and Systems Conference, BioCAS (with H. Jafari, the best paper overall, 199 submitted papers), 2011.AMD/CICC Student Award at IEEE Custom Integrated Circuits Conference, CICC (with M. Nazari, $200 prize, one of the highest ranked student papers, 305 submitted papers), 2010.Best Student Paper Award nomination at IEEE Biomedical Circuits and Systems Conference, BioCAS (with K. Abdelhalim, top seven student papers, 126 submitted papers), 2010.Best Student Paper Award, IEEE International Symposium on Circuits and Systems, ISCAS (with A. Nilchi, $400 prize, one of the two best student papers, 1631 submitted papers), 2009.Best Paper Award, IEEE International Symposium on Circuits and Systems, ISCAS (with A. Nilchi, the top paper, selected by IEEE Sensory Systems Technical Committee, 1631 submitted papers conference-wide), 2009.Best Student Paper Contest Finalist, IEEE International Symposium on Circuits and Systems (with F. Shahrokhi, top nine student papers out of 783 regular papers), ISCAS 2009.**National**Award for Excellence in Microsystems CAD Tools and Design Methodology, the winner of CMC TEXPO National Student Research Annual Competition, June 2022 (with R. Silva, $3,000 prize).RBC Prize for Innovation & Entrepreneurship, 1st Prize Early-Stage Competition in 2021 (with G. O’Leary, T. Valiante, $10,000 prize).GlobalFoundries Micro-Nanosystems Design Award, the winner of CMC TEXPO National Student Research Annual Competition, 2021 (with R. Gulve, $3,000 prize).Brian L. Barge Award for Excellence in Microsystems Integration, the winner of CMC TEXPO National Student Research Annual Competition in 2008 (with H. Jafari, $3,500 prize), in 2012 (with H. Kassiri and N. Soltani, $3,500 prize), and in 2018 (with R. Pazhouhandeh, $3,500 prize).Natural Sciences and Engineering Research Council of Canada (NSERC) Discovery Accelerator Award (awarded to top Canadian research programs superior in originality and innovation; up to 125 awards are offered nation-wide in all NSERC disciplines, $120,000), 2017.1st Rank in Collaborative Health Research Projects competition by Canadian Institutes of Health Research (scored first among 116 submitted proposals), 2016.The MEMSCAP Microsystems Design Award, the winner of CMC TEXPO National Student Research Annual Competition (with A. Bagheri and S. Gabran, $3,000 prize), 2012.DALSA Corporation Award for Excellence in Microsystems Innovation, the winner of a CMC TEXPO National Student Research Annual Competition (with A. Olyaei, $3,000 prize), 2006 and (with K. Abdelhalim, $3,000 prize) 2009.Canadian Institutes of Health Research (CIHR) BioContact Next Generation Award (with M. Derchansky, $2,000 prize), 2005.**Provincial / Local**Stanley Ho Professorship in Microelectronics, Endowed Chair, 2025-2029.John W. Senders Award for Imaginative Design (For Imaginative and Successful Application of Engineering to the Design of a Medical Device, won by a Capstone Design Project team I co-supervised, $2,900), Apr. 2024.Schulich Leaders Scholarship (won by Anush Mutyala, a high-school intern, based on research done in our lab, $120,000), 2024.Connaught Innovation Award (for the development of promising technology; $75,000; $50,000; $50,000, $75,000, $75,000), 2016, 2019, 2021 2022, and 2024.Photonics Innovation Centre Award (for a Best Multidisciplinary Project in the Field of Photonics, won by PhD student R. Gulve, $10,000 prize), 2020. Analog Devices Outstanding Student Designer Award (for Excellence in Analog, Mixed-Signal, Digital IC Design, or System-Level IC Architectures, won by PhD student M. ElAnsary, $1,500 prize), 2018.Ontario Neurotech Entrepreneurs Award (for AI-powered software to help physicians more accurately and efficiently identify seizure-producing brain regions, with D. Groppe and T. Valiante, $50,000), 2017.Ontario Brain Institute Entrepreneur Award (for neurotechnology with high commercialization potential, with H. Kassiri, N. Soltani, $50,000), 2015. Heffernan/Co-Steel Innovation Commercialization Fellowship (for research with high commercialization potential, with H. Kassiri, N. Soltani, $34,000), 2015.**Teaching**Departmental Teaching Award, as voted by undergraduate students, Department of Electrical and Computer Engineering, University of Toronto (top four professors in the department, by popular student vote), 2015.Undergraduate Teaching Award for teaching excellence, University of Toronto Students Union (five awards across the university), 2008-2009. |
| RESEARCH GRANTS AND CONTRACTS Annual Total |
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|  | “Personalized Contingent Neurostimulation for Epilepsy by Machine Learning in Organic Brain Interfaces,” PI, Canadian Institutes of Health Research (CIHR) and Natural Sciences and Engineering Council of Canada (NSERC), Collaborative Health Research Projects, 4/2020-3/2023. “Closed-loop Artificially Intelligent Fiber-selective Peripheral Nerve Interface for Neuroprosthetic Applications,” CARTE Seed Project Funding, 4/2020-3/2022.“CenteR for Advancing Neurotechnological Innovation to Application (CRANIA),” co-PI, Canadian Foundation for Innovation ($6.5M), 2018-2023.“Programmable Camera Systems for Transport-Aware Imaging,” co-PI, NSERC Research Tools and Instruments, 4/2018-3/2019.“Heterogeneous Integration of High-Density Analog Crossbar for Advanced Data Processing,” co-PI, Natural Sciences and Engineering Council of Canada (NSERC), Strategic Projects, 10/2017-09/2020. “Artificially Intelligent Neurostimulators for Drug-Resistant Epilepsy,” PI, Canadian Institutes of Health Research (CIHR), Project Grant, 4/2017-3/2022.“Transport-Aware Image Sensors,” PI, Natural Sciences and Engineering Council of Canada (NSERC), Discovery Award, 05/2017-04/2022.“Wireless Neurophotonic Probes for the Interrogation of Neurons in Memory Circuits,” co-PI, Canadian Institutes of Health Research (CIHR) and Natural Sciences and Engineering Council of Canada (NSERC), Collaborative Health Research Projects, 4/2017-3/2020.“A Clinical Study of Seizure-Aborting Implantable Neuro-stimulation Efficacy in Treating Drug-Resistant Epilepsy,” PI, University of Toronto EMHSeed Award, 1/2017-12/2018.“Artificially Intelligent Neurostimulators for Drug-Resistant Epilepsy,” PI, Canadian Institutes of Health Research (CIHR), Project Grant, Bridge Funding, 9/2016-9/2017.“Patient-Specific Adaptive Closed-Loop Neurostimulation for Optimum Treatment of Intractable Epilepsy,” PI, Canadian Institutes of Health Research (CIHR) and Natural Sciences and Engineering Council of Canada (NSERC), Collaborative Health Research Projects, 4/2016-3/2019.“Computational and Optical Processing Architectures for Next-Generation Mobile Cameras,” co-PI, Natural Sciences and Engineering Council of Canada (NSERC), Strategic Projects, 10/2014-09/2017.“Validation of Monitoring Changes in Brain Synchrony to Anticipate Seizures and Implement Feedback Stimulation to Stop Seizure Occurrence,” Co-I, Ontario Brain Institute, 3/2011-4/2013.“Fully Implantable Wireless Multi-Electrode ECoG Monitoring Systems,” PI, Natural Sciences and Engineering Council of Canada (NSERC), Collaborative Health Research Projects, 4/2012-3/2015.“Research Instruments for Experimental Characterization of Wireless Biomedical Sensory Microsystems,” PI, NSERC Research Tools and Instruments, 4/2012-3/2013.“Electronic Microsystems for Ubiquitous Biomedical Sensing,” PI, Natural Sciences and Engineering Council of Canada (NSERC), Discovery Award, 05/2012-04/2017.“A Low-cost, Compact Spectral Imaging Microsystem for Rapid, Regenerative and Highly Selective Nucleic Acid Detection,” PI, Natural Sciences and Engineering Council of Canada (NSERC), Strategic Projects, 10/2010-09/2013.“Micromachined Electrodes and Integrated Circuits for Implantable Cortical Brain Interfaces,” PI, Natural Sciences and Engineering Council of Canada (NSERC), Strategic Projects, 10/2009-09/2012.Short-term contract, PI, Industrial Partner, 2/2008-3/2008.“Electro-Optical Microsystem for DNA Detection,” PI, Ontario Centres of Excellence, Centre for Photonics, 1/2008-9/2008.“2-D Integrated Microsystem for Neural Recording and Stimulation in the Brain,” peer-reviewed Hybrid Integration project, PI, Canadian Microelectronics Corporation, 12/2007-9/2008. “Integrated Neural Interfaces for Epileptic Seizure Monitoring,” Co-I, subcontract from Prof. P. Carlen, University Health Network, University of Toronto, 9/2006-8/2008.“Hybrid Integration Technologies for Optical DNA Detection,” peer-reviewed Hybrid Integration project, PI, Canadian Microelectronics Corporation, 1/2008-12/2008.“Smart Sensory Microsystems,” PI, Natural Sciences and Engineering Council of Canada (NSERC), Discovery Award, 05/2007-04/2012.NSERC Industrial Postgraduate Scholarship (recipient: M.A.Sc. student Farzaneh Shahrokhi), Medtrode Corporation, 9/2006-8/2008.“Hybrid Integration Technologies for Brain-Chip Interfaces,” Hybrid Integration project, PI, Canadian Microelectronics Corporation, 2006.Infrastructure Operating Fund Award, PI, Canada Foundation for Innovation (CFI), 4/2006-3/2010.“Intelligent Sensory Integrated Systems,” PI, New Opportunities Award, Canada Foundation for Innovation (CFI), 11/2005-3/2008.“Intelligent Sensory Integrated Systems,” PI, Ontario Research Fund, 11/2005-3/2008.“Real-time Human Gate Recognition for Automated Surveillance,” Co-I with D. Hatzinakos, K. Plataniotis, and P. Klentrou, Communications and Information Technology Ontario (CITO), 6/2004-5/2006.“Autonomous Integrated Vision Systems,” PI, Natural Sciences and Engineering Council of Canada (NSERC), Discovery Award, 05/2003-04/2007.“Mixed-Signal VLSI Circuits and Systems,” PI, Connaught Foundation, 10/2002.“Mixed-Signal VLSI Circuits and Systems,” PI, University of Toronto, ECE Dept., 10/2002.  | $250,000$60,000$208,000$148,509$127,200$220,000$58,000$62,000$30,000$100,000$77,400$50,500$20,000$60,833$145,545$21,750$75,150$78,240$10,000$30,000­$8,000$13,250$14,000$22,500$6,000$5,000$7,517$33,408$33,408$17,225$20,850$10,000$100,000 | $750,000$120,000$1,041,000$148,509$636,000$1,100,000$290,000$186,000$60,000$100,000$232,200$151,500$40,000$182,500$145,545$108,750$225,450$234,720$10,000$30,000­$8,000$26,500$14,000$112,500$12,000$5,000$30,068$100,226$100,226$34,450$83,400$10,000$100,000 |
| CURRENT GRADUATE / POST-GRADUATE RESEARCH ADVISEES |
|  | **Post-Doctoral Fellows / Scientists** Jianxiong (Jay) Xu, PhD from University of Toronto, 5/2024-current.**PhD Students** Roberto Rangel, 9/2019-current.Mohammad Abdolrazzaghi, 9/2020-current (co-supervised with Prof. G. Eleftheriades).Sudip Nag, 1/2021-current.Mustafa Kanchwala, 9/2021-current.Ayandev Barman, 9/2021-current.Yu Huang, 5/2022-current (co-supervised with Prof. X. Liu).Hao Yang, 1/2024-current.Jangwon Suh, 9/2024-current.Chu King Kung, 9/2024-current.**MASc Students** Xiaonong (Frank) Sun, 5/2022-current.Andre Miguel Cornejo Marin, 1/2023-current (co-supervised with Prof. T. Valiante).**MEng Project Students**Ge (Carol) Gao, 5/2023-12/2023Project: Energy-Efficient Analog-to-Digital Converters for Implantable Wireless Brain-Computer InterfacesAryasree Remadevi, 1/2024-currentProject: Chip-scale Artificially Intelligent Electrical Stimulator for Highly Localized Brain and Peripheral Nerve NeuromodulationYuanze Yang, 1/2024-currentProject: Developing a Neural Recording and Stimulating System for Peripheral NervesYixu Ye (Henry), 1/2024-currentProject: Developing a Neural Recording and Stimulating System for Peripheral NervesSongyu Yang, 1/2024-currentProject: Estimating Rodent Pose using Computer Vision and Neural Signal RecordingsHengjia Zhang (Bruce), 1/2024-currentProject: Estimating Rodent Pose using Computer Vision and Neural Signal RecordingsBoshen Zhang, 1/2024-currentProject: Multi-Camera Control with Coded-Exposure Imaging System for Enhanced Scene ModelingKailun Jin, 1/2024-currentProject: Simultaneous Operation of RFDC and ADC Readout Methods in Software-Defined Camera Systems for Hybrid Imaging ApplicationsQiaosong Deng, 1/2024-currentProject: Spiking Neural Networks for Brain-Computer Interfaces |
| FORMER GRADUATE RESEARCH ADVISEES |
|  | **Former Post-Doctoral Fellows**Tariq Salam (PhD, Ecole Polytechnique, Montreal), Post-Doctoral Fellow, 03/2012-01/2015 (co-supervised with Profs. Perez Velazquez and Carlen, 50%).Project: Seizure Anticipation and Closed-Loop Abortion in Rodent Models of EpilepsyUpon completion: Vice-President of Technology at Avertus, TorontoCurrently: Bioelectronics R&D Engineer at GlaxoSmithKline, Stevenage, UKHyunjoong Lee (PhD, Seoul National University, South Korea), Post-Doctoral Fellow, 09/2014-01/2016 (co-supervised with Prof. Kutulakos, 50%).Project: CMOS Structured-Light Computational ImagersUpon completion: Electronics and Telecommunications Research Institute, South KoreaEnver Kilinc (PhD, EPFL, Switzerland), Post-Doctoral Fellow, 03/2015-02/2016 (co-supervised with Prof. Gulak, 50%).Project: Implantable Transceiver and Antenna DesignUpon completion: Post-Doctoral Fellow, University of TorontoCurrently: Co-founder/CTO Co-founder, Micromensio, TorontoNikola Katic (PhD, EPFL, Switzerland), Post-Doctoral Fellow, 04/2016-06/2017 (co-supervised with Prof. Kutulakos, 50%).Project: Transport-aware Image SensorsUpon completion: Senior Analog Design Engineer at Synopsys, TorontoCurrently: Senior Analog Design Engineer, Intel, TorontoXuan-Thuan Nguyen (PhD, University of Electro-Communications, Japan), Post-Doctoral Fellow, 3/2018-2/2019.Project: Digital Accelerators of Machine Learning Algorithms for Closed-loop NeurostimulationUpon completion: Digital Designer at Tradetone Research Labs , TorontoDavid Groppe (PhD, UCSD, USA) Post-Doctoral Fellow / Research Scientist, 09/2016-09/2019 (co-supervised with Prof. T. Valiante, 50%).Project: Machine Learning Algorithms for Closed-loop NeurostimulationUpon completion: Clinical Data Scientist at Persyst Development Corporation, TorontoZhengfan Xia (PhD, Tohoku University, Japan), Post-Doctoral Fellow, 10/2017-10/2019 (co-supervised with Prof. R. Kutulakos, 50%).Project: Digital Systems for Computational Photography CamerasUpon completion: Digital Designer at Tradetone Research Labs , TorontoAmirali Amirsoleimani (PhD, University of Windsor, Canada), Post-Doctoral Fellow, 2/2018-06/2021.Project: Monolithic CMOS-Memristor Integrated SystemsUpon completion: Assistant Professor at York University, TorontoJoshua Olorocisimo (PhD from Nara Institute of Science and Technology, Japan), Post-Doctoral Fellow, 12/2023-9/2024.Project: Selective Stimulation of Peripheral NervesUpon completion: Biomedical Data Analytics, Toronto**Former PhD Students**Karim Abdelhalim, Ph.D. Degree, 09/2007-01/2013.Funding Award: Alexander Graham Bell Canada Graduate ScholarshipThesis: Wireless Neural Recording and Stimulation SoCs for Monitoring and Treatment ofIntractable EpilepsyUpon graduation: IC Design Engineer at Broadcom Inc, Irvine, CACurrently: Senior Staff Engineer at Inphi, Orange County, CADerek Ho, Ph.D. Degree, 09/2007-01/2013 (co-supervised with Prof. G. Gulak).Funding Award: NSERC Postgraduate Scholarships – Doctoral (PGS D) AwardThesis: CMOS Imager Design Optimizations for DNA Fluorescence BiosensingUpon graduation: Associate Professor, Department of Physics, City University of Hong KongHamed Jafari, Ph.D. Degree, 09/2007-05/2013.Thesis: CMOS Universal Real-time Label-free DNA Analysis System-on-chip Upon graduation: IC Design Engineer at Semtech/Snowbush, Toronto, OntarioCurrently: CTO and Co-Founder at EnviroSen, TorontoHossein Kassiri, Ph.D. Degree, 02/2011-12/2015.Thesis: Multi-Modal Densely-Integrated Closed-Loop Neurostimulators for Monitoring andTreatment of Neurological DisordersUpon graduation: Assistant Professor, Department of Electrical Engineering and Computer Science, York University, TorontoNima Soltani, Ph.D. Degree, 09/2011-12/2015.Thesis: Inductively-Powered Implantable Integrated Circuits for Amperometric Brain ChemistryUpon graduation: Analog and Mixed-Signal Design Engineer at Synopsis, TorontoCurrently: Analog and Mixed-Signal Design Engineer at Intel, TorontoMaged ElAnsary, Ph.D. Degree, 9/2015-12/2019.Thesis: Multi-modal Fully-wireless SoCs for Interfacing with the Nervous SystemUpon graduation: Analog and Mixed-Signal Design Engineer at Rambus, TorontoReza Pazhouhandeh, 9/2015-11/2019.Thesis: BRAINI: Bidirectional Rail-to-Rail Artifact-Immune Neural-InterfaceUpon graduation: Analog and Mixed-Signal Design Engineer at AnalogX, TorontoNavid Sarhangnejad, 9/2014-3/2021.Thesis: Per-Pixel Coded-Exposure CMOS Image SensorsUpon graduation: Analog IC Design Engineer at Huawei, TorontoGerard O’Leary, 9/2017-2/2022.Thesis: Closed-Loop Neuroelectronic Interfaces: In Vitro to Silicon to Clinical TranslationUpon graduation: CEO, NerveX, TorontoNafiseh Ghoroghchian, 9/2017-12/2022 (co-supervised with Prof. Draper, 50%).Funding Award: Connaught AwardThesis: Graph-Based Learning for System Analysis and Control: Applications in Brain NetworksUpon graduation: Machine Learning Data Scientist, Foqus Technologies Inc, TorontoRahul Gulve, 9/2017-9/2023.Thesis: Computational CMOS Image Sensors: Pixel-Wise Programmable Exposure and High-Dynamic-Range Flux ReadoutUpon graduation: Analog IC Design Engineer, Alphawave Inc, TorontoJianxiong (Jay) Xu, 9/2018-5/2024.Thesis: Spatially Zooming Energy-Efficient Integrated Neural Interfaces with Quantization Noise SuppressionUpon graduation: Post-Doctoral Fellow at the University of Toronto**Former MASc Students**Ashkan Olyaei, M.A.Sc. Degree, 09/2003-04/2006.Thesis: ViPro: Focal-Plane CMOS Spatially-Oversampling Computational Image SensorUpon graduation: Staff Manager / Senior Staff RF-Analog Design Engineer at Marvell Semiconductor, San Jose, CARafal Karakiewicz, M.A.Sc. Degree, 09/2003-08/2006. Thesis: Mixed-Signal VLSI Adiabatic Array ComputingUpon graduation: Analog IC Design Engineer at Synopsis, Snowbush, TorontoWas at: Analog IC Design Manager at Intel, Toronto, ONJoseph Aziz, M.A.Sc. Degree, 09/2004-10/2006 (co-supervised with Prof. B. Bardakjian).Thesis: Multi-Channel Signal-Processing Integrated Neural InterfacesUpon graduation: Analog IC Design Engineer at Broadcom, Textronix, InphiCurrently: Touch ASIC Architect at Apple, Cupertino, CAAlireza Nilchi, M.A.Sc. Degree, 09/2005-11/2007.Thesis: Focal-Plane CMOS Algorithmically-Multiplying Computational Image SensorUpon graduation: Analog IC Design Engineer at Intel, TorontoCurrently: Senior Staff Scientist at Broadcom, Irvine, CAMeisam Nazari, M.A.Sc. Degree, 01/2006-06/2008. Thesis: CMOS Wide-Dynamic-Range High-Throughput PotentiostatUpon graduation: PhD student at California Institute of TechnologyCurrently: Postdoctoral Fellow at California Institute of Technology Ritu Raj Singh, M.A.Sc. Degree, 09/2006-11/2008.Thesis: Luminescence Contact Imaging MicrosystemsUpon graduation: PhD student at University of Texas, AustinCurrently: Senior IC Design Engineer at InSilixa, Sunnyvale, CAFarzaneh Shahrokhi, M.A.Sc. Degree, 09/2006-01/2009.Thesis: Multi-Channel Fully Differential Digital Integrated Neural Recording and Stimulation InterfacesUpon graduation: IC Design Engineer at Synaptics Inc, Santa Clara, CARuslana Shulyzki, M.A.Sc. Degree, 09/2006-09/2009.Thesis: Bidirectional Integrated Neural Interface for Adaptive Cortical StimulationUpon graduation: IC Design Engineer at Ignis Innovation Inc, Waterloo, OntarioCurrently: Analog IC Design Engineer at Intel, TorontoArezu Bagheri, M.A.Sc. Degree, 09/2010-09/2013.Thesis: High-Integration-Density Neural Interfaces for High-Spatial-Resolution IntracranialEEG MonitoringUpon graduation: IC Design Engineer at Semtech/Snowbush, Toronto, OntarioCurrently: Senior Analog Mixed-Signal Design Engineer at Peregrine Semiconductor, San DiegoArshya Feyzi, M.A.Sc. Degree, 09/2011-10/2014. (co-supervised with Prof. G. Gulak).Thesis: A CMOS Multi-Modal Contact-Imaging Scanning MicroscopeUpon graduation: IC Design Engineer at Analog Devices, Boston, MAWilfred Cho, M.A.Sc. Degree, 09/2015-10/2017.Thesis: Proxy Relearning for Feature-Driven Pattern Recognition in High-Dimensional Imbalanced Time Series Data SetsUpon graduation: Machine Learning Engineer at Evolv TechnologiesGerard O’Leary, M.A.Sc. Degree, 09/2015-01/2018.Thesis: Intelligent Medical Devices for Brain State Classification and Responsive NeuromodulationUpon graduation: PhD student at the University of TorontoGairik Dutta, M.A.Sc. Degree, 7/2016-1/2019.Thesis: Column-Parallel 7μm-pitch 2nd-order ∆Σ ADCs for Computational Image SensorsUpon graduation: IC Design Engineer at Rambus, TorontoNikita Gusev, M.A.Sc. Degree, 9/2017-9/2019.Thesis: System-Level Design of Coded-Exposure Cameras for Computational Imaging ApplicationsUpon graduation: Design Engineer at Alphawave, TorontoCamilo Tejeiro, M.A.Sc. Degree, 1/2018-4/2020.Thesis: Low-power Edge-combining Ring-oscillator-based RF Transmitters for Flexible-electrode Neural MicroimplantsUpon graduation: IC Design Engineer at Synopsys, TorontoSaima Ali, 9/2017-9/2020 (co-supervised with Prof. M. Popovic).Thesis: Design of a Wireless Communication System for Neural ImplantsUpon graduation: PhD student, University of TorontoJamie Koerner, M.A.Sc. Degree, 9/2018-10/2020 (co-supervised with Prof. T. Valiante).Funding Award: NSERC Postgraduate Scholarships AwardThesis: Machine Learning-Driven Patient-Specific Early Seizure Detection for Neuromodulation Devices Upon graduation: PhD student, Massachusetts Institute of TechnologyMotasem Sakr, M.A.Sc. Degree, 9/2019-9/2021.Thesis: Hardware-Efficient Accelerators for Mask Generation in Coded-Exposure CamerasUpon graduation: IC Design Engineer at NVIDIA, TorontoDon Nguyen, M.A.Sc. Degree, 9/2019-4/2023. Thesis: Selected Topics in Computational Imaging: From Pixel Simulation to Applications of Coded-Exposure Cameras**Former MEng Students**Yu Hu, M.Eng. Degree, 5/2014-8/2014. Project: High-Voltage Neural Stimulator with Adaptive Loading ConsiderationAtul Patridar, M.Eng. Degree, 5/2014 -8/2014. Project: Wireless Radio Connectivity for Responsive Neuro-Stimulation ImplantsJiaming Liu, M.Eng. Degree, 5/2014-8/2014. Project: Wirelessly Powering for Responsive Neuro-Stimulation ImplantsAditi Chemparathy, M.Eng. Degree, 10/2013-12/2014. Project: Low-Latency Sleep Stage ClassifierKevin Lee, M.Eng. Degree, 05/2015-09/2015.Project: High-Speed I/O Design for Pixel Programmable CMOS Image Sensor Hardik Patel, M.Eng. Degree, 05/2015-12/2015. Project: Optoelectronic Testing Platform for 3D Image Sensors CharacterizationAsish Abraham, M.Eng. Degree, 04/2016-05/2017.Project: ASIC Implementation of a Low-Power Microcontroller for Implantable Biomedical System ControlGoutham Palaniappan, M.Eng. Degree, 04/2016-08/2017.Project: Wireless Powering Systems for Neural ImplantsVeronica Li, M.Eng. Degree, 12/2016-08/2017. Project: Low-noise Microelectronic Interface for Brain-Monitoring Microelectrode ArraysNaba Siddiqui, M.Eng. Degree, 01/2017-08/2017. Project: 3D Graphical User Interface for Localizing Intracranial Electrode LocationsXu (Jay) Jianxiong, Candidate for M.Eng. Degree, 4/2017-8/2018.Project: Wireless Power Transfer to Integrated CircuitsJaimin Joshi, Candidate for M.Eng. Degree, 4/2017-7/2018.Project: Digital Systems for Real-Time Impedance SpectroscopySrinidhi Balasubrahmanya, Candidate for M.Eng. Degree, 6/2017-7/2018.Project: High-speed Wireline Communications William Isaac, Candidate for M.Eng. Degree, 8/2018-5/2019.Project: Bio-electronic Systems for Neural Recording     Atul Grover, Candidate for M.Eng. Degree, 4/2019-9/2019.Project: Implementation of Support Vector Machine on Memristive HardwareSzu-Chieh Fang, Candidate for M.Eng. Degree, 4/2019-1/2020.Project: Design of a Software Interface for a Memristive Machine Learning PlatformChenxi Tang, Candidate for M.Eng. Degree, 2/2019-4/2020.Project: Digitally Assisted Analog Front EndsJaina Patel, Candidate for M.Eng. Degree, 4/2019-5/2020. Project: FPGA-based ASIC Test FrameworkKartik Sunil Sharma, Candidate for M.Eng. Degree, 6/2019-5/2020.Project: Design and verification of on-chip Impedance Measurement SystemsRakshith Ramesh, Candidate for M.Eng. Degree, 5/2020-8/2020.Project: Electronic Interfacing with In-vitro Microelectrode ArraysYaoming Yin, Candidate for M.Eng. Degree, 1/2020-12/2020.Project: Layout Design and Characterization of ADC Circuits for Coded-Exposure Image SensorsYushi Gavin Guan, Candidate for M.Eng. Degree, 5/2020-4/2021.Project: Seizure Generation by Generative Adversarial NetworksGuanyan Han, Candidate for M.Eng. Degree, 5/2021- 8/2021.Project: Successive-Approximation ADC for an Image SensorSanjana Seerala, 5/2021- 8/2022.Project: Real-time Neural Spike Sorting Hardware DevelopmentSheng Zhao, 1/2022-8/2022.Project: Digital Circuit Design for Coded-Exposure Image SensorsNicholas Popowich, 1/2022-8/2022.Project: Coded-Exposure Image Sensor Technology PortingEiley Tarlton, 5/2022-12/2022.Project: Next-Generation Brain Machine Interface ASIC Validation and TestingGe (Carol) Gao, 5/2023-12/2023Project: Energy-Efficient Analog-to-Digital Converters for Implantable Wireless Brain-Computer InterfacesHaotian Zhu, 1/2023-5/2023.Project: Development of Coded-Exposure Hybrid Imaging Applications with a Custom Image SensorSavo Bajic, 1/2023-9/2023.Project: Camera System for Time-of-Flight 3D Imaging with Custom Coded-Exposure Image SensorAkshith Rajkumar, 1/2023-5/2023.Project: Camera System for Computational Photography with Custom Coded-Exposure Image SensorZhengyu Cai, 5/2023-12/2023.Project name: Efficient Learning Schemes for Spiking Neural Networks (co-supervised with Prof. A. Amirsoleimani) |
| UNDERGRADUATE CAPSTONE DESIGN PROJECT AND THESIS ADVISEES |
|  | 2003-20042004-20052005-20062006-20072007-20082008-20092009-20102011-20122012-20132013-20142014-20152015-20162017-20182018-20192019-20202021-20222022-20232023-20242024-2025 | King Sun (Francis) Tam T.K. Chan Po-Yu Liu Mustafa Alam Ahmad Attia Ajmal Khan Taha Sheikh Houman Akbari Negar Habibi Yasaman Faghih John Tan Colin Li Chuan Qin Ruslana GelmanAngie Mehta Khaled QasmiehKhalil Oudah Tina Tahmoures-ZadehJon PerrasNatasha BakerBrian ChoiDavid WuKim LiuEric PaiRyan PayogoFady AkladiosBenny TuDavid CrockettVadim SmolyakovChi Kin ChongMuhammad FarhandarRobert Gunabalendra Horia PopoviciVisnuthanan SiritharanJohn SisonDarshan ThothiralingWen Jie YanXin Yun ZhangZhao Yuan ZhengMiaad Seyed AlirotehAdam ShierNikita TarakanovSiddharth KaulChan Hu NgenJunaid IkramSheraz QadeerRichard GaoDerek PetersonKyeong (Kris) KangGuang-Yo (Zack) TzengChang LiuDavid GalusTerrence Cole Millar Dan LitovitzChi-Chun TienPeter Zhi Xuan LiNhien Tran-NguyenFrancis KangDerek LamYae Seoung (Yuni) KimAshley Hung Timothy Yeung Jaden ReimerFatima SiddiquiKhalil ScottMina AssaadMehak KalraKevin Kim Selena LiuAurora NowickiKimberley OrnaJunyu MaHao ZhuYichen XuPablo Medina LaraSerena Liu | (capstone design project)(capstone design project)(capstone design project)(capstone design project)(capstone design project)(capstone design project)(capstone design project)(capstone design project)(capstone design project)(capstone design project)(capstone design project, co-supervised with Prof. B. Bardakjian)(capstone design project, co-supervised with Prof. B. Bardakjian)(capstone design project, co-supervised with Prof. B. Bardakjian)(capstone design project)(capstone design project)(capstone design project)(capstone design project)(capstone design project)(undergraduate thesis)(capstone design project)(capstone design project)(capstone design project) (capstone design project)(capstone design project)(capstone design project)(capstone design project)(capstone design project)(capstone design project)(undergraduate thesis)(capstone design project)(capstone design project)(capstone design project)(capstone design project)(capstone design project)(capstone design project)(capstone design project)(capstone design project)(capstone design project)(capstone design project)(undergraduate thesis)(capstone design project)(capstone design project)(capstone design project)(capstone design project)(capstone design project)(capstone design project)(undergraduate thesis)(undergraduate thesis)(undergraduate thesis)(undergraduate thesis)(undergraduate thesis)(undergraduate thesis)(undergraduate thesis)(capstone design project)(capstone design project)(undergraduate thesis)(undergraduate thesis)(undergraduate thesis)(undergraduate thesis)(undergraduate thesis)(capstone design project)(capstone design project)(capstone design project)(capstone design project)(capstone design project)(capstone design project)(capstone design project)(undergraduate thesis)(capstone design project)(capstone design project)(capstone design project)(capstone design project)(capstone design project)(capstone design project)(capstone design project)(undergraduate thesis) |
| UNDERGRADUATE RESEARCH ADVISEES |
|  | 2004200520062011201320142015201620172018201920202021202220232024 | Alborz JooyaieJohn TanHsiang-Hua (Andy) HungRuslana GelmanJasper ChanGaurav Jain Stephen ChinKhalil OudahAmogh VidwansKevin GumbaAlison MaRenan Goulart HeinzenCaroline Marinho ManoPedro Veit MichelWillian BeneducciMarcelo Bissi PiresFadime BekmambetovaFu-Der (Fred) ChenBehraz VatankhahghadimPeter Zhi Xuan LiSeyedeh Sana TonekaboniChristopher LucasiusSepehr SemsarAlan LiGairik DuttaShreedutt HegdeJesse BarcelosChengzhi (Winston) LiuTerrence Cole Millar Mary Catherine McIntosh Anastasia KolesnikovPeter TanugrahaEthan WenDayeol Choi Peter Zhi Xuan Li Akshay Kamath Sepehr SemsarKamyar GhofraniR. Andrei Romero AlvarezJi Tong (Michael) YinTerrence Cole Millar Nikita Gusev Winston LiuVincent LoNafis AhbabAnas AhmedSanjana Seerala Ali HaydarogluYin Tai HuangHui Feng Ke Shichen LuGilead PoslunsShahryar RajabzadehHui Di WangJinzhuo (Sarah) TangZiming (Michael) Xiong Qingchong Zeng Ken Chen *Led by G. O’Leary:*Farhad YusufaliFrancis Kang Adam GierlachJamie KoernerSonali Dey*Led by R. Pazhouhandeh:*Michael KarrasZhiwei LiuNhien Tran-NguyenSaad Jameel*Led by M. ElAnsary*Zihan (Simon) ZhaoMichelle TessyM.Mustafa Arif*Led by R. Gulve*Tobias RozarioYangfan WangAlexander BuckYuanli (Danny) DingXinyi (Cindy) HouQingchong ZengTianyi (Ronan) Zhang*Led by G. O’Leary:*Nizar IslahAditya SaigalAdam GierlachShounak SuralBipasha Goyal*Led by A. Amirsoleimani:*Nhien Tran NguyenMartin FfrenchTony Liu*Led by R. Gulve:*Sharon LinEn Xu LiDylan Hai-Hien DaoXin ChenYifan CuiRain Wu*Led by J. Sales:*Sidharth Thomas*Led by A. Amirsoleimani:*Louis PrimaueTony LiuBenjamin ChangTengyu SongChenqi LiShawn ZhangShakiba TonekabonipourMichael XiongSzu-Chieh FangDaniel Pinheiro LealVince TranVince Tran*Led by G. O’Leary:*Jake SprengerAhmed AbdelmoneimRakshith RameshMaitreyi JoshiNizar IslahYushi Gavin GuanZhiyu Yang*Led by R. Gulve:*Alex BuckSean WuKathy ZhuangAbdullah MohammedMargarita DiazAbhay GopinathanDrini KercikuZongyan (Paul) YaoSelina Wan*Led by J. Sales:*Samantha UngerKarissa ChanColin Graham*Led by J. Sales:*Albert HuangHaoxiang YangArielle ZhangPatty LiuGuozhen Ding*Led by G. O’Leary:*Cameron RodriquezRobert PurcaruSoliman AliKevin ZhuFabin FlasiusChirag Sethi*Led by R. Rangel:*Qianqian ZhangLeo HanxuArash DehkordiIliya ShofmanNicholas PopowichXiaonong Frank Sun*Led by A. Amirsoleimani:*Tony FuJack CaiBrian ChenVince TranAli AlsharaawiRishabh SainiXuening DingJonathan Wu Tianyi Tim ZhangRico ZhuKevin WangLouis Primaue Benjamin Cheng Chenqi Li*Led by N. Ghoroghchian:*Hanna SingurdsonLokeesan KaneshwaranNick Nabavi*Led by J. Sales:*Shafinul HaqueKemeng HanYuan (Jenny) SuiOurong Lin*Led by A. Amirsoleimani:*Xun CaiYan ZhuTimothy ZhangArielle ZhangLouis PrimeauChenxin ZhengJonathan WooXuening DongAli Al-sharaawiBrian ChenHao YouMuhammad Ahsan Kaleem*Led by S. Nag:*Mengyan ZhuKevin Kim*Led by R. Rangel:*David ShemeshBora BayazitDeeksha TewariKarthikeyan R*Led by M. Abdolrazzaghi:*Aditya Sharma*Led by F. Torres:*Aditya Mohan*Led by R. Silva/A. Barman:*Harry WangAaron ZhouLinda ZhaoJingmin WangKevin ZhuBrett (Jiaxin) YangAlex YuanBenjamin ChapmanAmy LuoDemeng (Derek) ChenElizabeth Sumual*Led by S. Nag:*A. Constas-MalevanetsXiangxuan (Noah) KongHanrui XingM. V. Sai Aditya*Led by Y. Huang*Shreyan Mahalanabis*Led by M. Kanchwala:*Mikael HajiAnush Mutyala*Led by J. Xu:*Sophie WuHaley HanJunyu MaHanzhang XingJackie TranJenny Sui*Led by A. Amirsoleimani:*Andy GongVince TranEllina ZhangJack CaiMuhammad Ahsan KaleemRudy JinHao You*Led by R. Silva/A. Barman:*Mateusz KazimierczakJiaheng (Ronaldo) LuoKarthik PurushothamRunze ZhuChenjia HuAsmita Zjigyasu*Led by M. Kanchwala:*Weian Deng (Victor)Christina PizzoniaO. DahanaggamaarachchiJason ZhangKoosha OmidianDiba Alam*Led by S. Nag:*Matvii PrytulaJin Che*Led by M. Abdolrazzaghi:*Yanze Wang*Led by J. Xu:*Jia Hua LiLingyun XuStella YuanRhianna Supriya SinghYishan ChenPasha HoShucheng GongChaeyoung LimMason CaiHao YouJoshua Ma*Led by A. Amirsoleimani:*Lucas ChoiYixin ZhaXunhao Lu | (NSERC USRA summer student)(NSERC USRA summer student)(NSERC USRA summer student)(NSERC USRA summer student)(NSERC USRA summer student)(NSERC USRA summer student)(NSERC USRA summer student)(summer student)(MITACS summer student from India)(NSERC USRA summer student)(NSERC USRA summer student)(summer student from Brazil)(summer student from Brazil)(summer student from Brazil)(summer student from Brazil)(summer student from Brazil)(NSERC USRA summer student)(NSERC USRA summer student)(NSERC USRA summer student)(NSERC USRA summer student)(NSERC USRA summer student)(NSERC USRA summer student)(NSERC USRA summer student)(NSERC USRA summer student)(MITACS summer student from India)(MITACS summer student from India)(summer research student)(summer research student)(summer research student)(NSERC USRA summer student)(NSERC USRA summer student)(NSERC USRA summer student)(summer intern from Department of Math)(summer intern from Department of 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| TEACHING |
|  | “Selected Topics in Circuits and Systems – VLSI Circuits and Systems for Pattern Recognition,” ECE1390, 9/2003-12/2003 (5 graduate students). “VLSI Design Methodology,” ECE1388, 9/2004-12/2004 (26 graduate students), 9/2005-12/2005 (16 graduate students), 9/2006-12/2006 (13 graduate students), 9/2007-12/2007 (25 graduate students), 9/2008-12/2008 (13 graduate students), 9/2009-12/2009 (33 graduate students), 9/2010-12/2010 (12 students), 9/2011-12/2011 (25 students), 9/2012-12/2012 (21 students), 9/2013-12/2013 (42 students), 9/2014-12/2014 (17 students), 9/2015-12/2015 (19 students), 9/2016-12/2016 (48 students), 9/2017-12/2017 (27 students), 9/2018-12/2018 (25 students), 9/2019-12/2019 (27 students), 1/2021-4/2021 (22 students), 9/2021-12/2021 (19 students), 9/2022-12/2022 (30 students), 9/2023-12/2023 (35 students), 9/2024-12/2024 (35 students).“Analog Electronics,” ECE530, 1/2004-4/2004 (55 students), 1/2005-4/2005 (65 students), 1/2006-4/2006 (89 students), 1/2007-4/2007 (66 students), 1/2008-4/2008 (44 students), 1/2009-4/2009 (54 students), 1/2010-4/2010 (52 students).“Digital Electronics,” ECE334, 1/2012-4/2012 (97 students), 1/2013-4/2013 (81 students), 1/2014-4/2014 (97 students), 1/2015-4/2015 (132 students, 2 sections), 1/2016-4/2016 (103 students), 1/2017-4/2017 (122 students), 1/2018-4/2018 (59 students), 9/2019-12/2019 (70 students), 1/2021-4/2021 (78 students), 9/2021-12/2021 (81 students), 9/2022-12/2022 (67 students).“Electronics,” ECE360 09/2011-12/2011 (73 students), 9/2012-12/2012 (78 students), 9/2013-12/2013 (64 students), 9/2015-12/2015 (49 students), 9/2016-12/2016 (45 students).“Introductory Electronics,” ECE231, 1/2003-4/2003 (89 students), 1/2004-4/2004 (87 students), 1/2005-4/2005 (88 students), 1/2006-4/2006 (70 students), 1/2007-4/2007 (60 students), 1/2008-4/2008 (107 students), 1/2009-4/2009 (103 students; 320 students coordinated), 1/2010-4/2010 (91 students, 315 students coordinated).“Introduction to Electrical and Computer Engineering,” ECE101, 2011-2016 (one lecture per year).“Electrical and Computer Engineering Seminar,” ECE201, 2015 (one lecture per year).“Engineering Science Seminar,” ESC301, 2024 (one lecture per year). |

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| SHORT COURSES/TUTORIALS |
|  | “Implantable Neurotechnologies: from Circuits and Signals to Systems and Applications,” half-day tutorial (with N. Thakor and M. Sawan), IEEE International Symposium on Circuits and Systems, 2016.“Amperometric Electrochemical Sensing in CMOS: Applications, Methods and Implementations,” invited plenary tutorial (with P. Mohseni), Biomedical Circuits and Systems Conference, San Diego, Nov. 10, 2011.“Pattern Recognition at 1GOPS/mW and Beyond: Massively Parallel Mixed-Signal VLSI Storage, Computing and Data Conversion,” half-day intensive course, Microelectronics Strategic Alliance of Quebec (ReSMiQ), Montreal, QC, March 4, 2005. |

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| INVITED PRESENTATIONS  |
|  | “Artificially Intelligent Closed-Loop Neurostimulators: Trade-offs Between Local and Remote Computing,” IEEE Custom Integrated Circuits Conference, invited featured presentation, Denver, USA, Apr. 24, 2024.“Three Degrees of Selectivity in Electronic Neuromodulation: Time, Data and Space,” IEEE Custom Integrated Circuits Conference, Brain-computer-interfaces invited panel presentation, Denver, USA, Apr. 22, 2024.“Fast Pixel-Programmable Image Sensors for Versatile Low-Cost Imaging with Software-Defined Cameras,” Rice University, invited seminar, March 8, 2024.“Artificially-Intelligent Closed-Loop Neurostimulators for the Treatment of Neurological Disorders,” IEEE Biomedical Circuits and Systems Conference, invited keynote talk, Toronto, Oct. 20, 2023.“Extending the Impact of Computational Imaging Beyond Phone Cameras: Fast Pixel-Programmable Image Sensors - the ‘FPGAs’ of the Image Sensors World,” Instituto de Microelectrónica de Sevilla, invited seminar, Sept. 18, 2023.“Extending the Impact of Computational Imaging Beyond Phone Cameras: Fast Pixel-Programmable Image Sensors - the “FPGAs” of the Image Sensors World,” University of Victoria, invited seminar, June 26, 2023.“Full-Day Live Demo: Low-Cost Coded-Exposure-Pixel Cameras for Robust High-Speed Computational Imaging at up to 18,000 Exposures-per-Second,” Conference on Computer Vision and Pattern Recognition, June 22, 2023.“Coded Two-Bucket Sensors for Active and Passive Imaging,” Opening Plenary Talk, International Workshop on Image Sensors and Imaging Systems (IWISS), Shizuoka University, Hamamatsu, Japan, Dec. 12, 2022 (presented by collaborator Prof. Kyros Kutulakos). “Artificially-Intelligent Closed-Loop Neurostimulators,” Neuroengineering Seminar, Institute for Neural Computation and Institute of Engineering in Medicine, invited seminar, University of California San Diego, Aug. 8, 2022.“Fast Field-Programmable Coded Image Sensors for Versatile Low-Cost Computational Imaging,” Seminar, Institute for Neural Computation, University of California San Diego, invited seminar, Aug. 5, 2022.“Artificially-intelligent Closed-loop Neurostimulators for the Treatment of Neurological Disorders,” IEEE European Solid-State Circuits Conference (ESSCIRC’21), Educational Workshop on Emerging Solutions for Sensors and Imagers, Circuits and Systems, Grenoble, France, Sept. 20, 2021.“Design Challenges in Closed-loop Neuromodulators: Case Study of Intractable Epilepsy,” IEEE Custom Integrated Circuits Conference (CICC’21), Forum on Human Brain-Machine Interfaces, online, Apr. 29, 2021. “Coded-pixel Multi-exposure Single-shot Image Sensors,” IEEE European Solid-State Circuits Conference (ESSCIRC’20), Educational Workshop on Emerging Solutions for Imaging Devices, Circuits and Systems, online, Sept. 2020.“Coded-exposure-pixel Image Sensors,” Imaging and Applied Optics Congress, Computational Optical Sensing and Imaging Meeting, online, June 24, 2020.“Electronic Design Challenges in Closed-loop Neuromodulation,” CRANIA Conference, Toronto, Sept. 16, 2019.“Demo: Dual-Tap Pipelined-Code-Memory Coded-Exposure-Pixel CMOS Image Sensor for Multi-Exposure Single-Frame Computational Imaging,” IEEE International Solid-State Circuits Conference (ISSCC’2019), Live Demonstration, San Francisco, Feb. 2019.“Active Illumination and Imaging across 10^-3-10^-12 s Timescales for General LOS/NLOS Scene Understanding: Programmable-pixel Image Sensors”, 36-month PI Review Meeting (with S. Narasimhan, K. Kutulakos), Arlington, VA, Apr. 3, 2019.“CMOS Image Sensors with Per-Pixel Coded Exposure,” Computational Light Transport Workshop, Banff International Research Station, Banff, AB, February 11, 2019.“Implantable Chips for Neural Recording and Stimulation,” EAEEG 72nd Annual Meeting, Toronto, Feb. 18. 2018.“Energy-Efficient Computational Light Transport Parsing: Computational Cameras,” 24-month PI Review Meeting (with S. Narasimhan, K. Kutulakos), Arlington, VA, Mar. 13, 2018.“Brain Monitoring and Modulation Building next generation Responsive Brain Stimulators,” Ontario Brain Institute EpLink Workshop (with T. Valiante), Nov. 11, London, 2017.“Energy-Efficient Computational Light Transport Parsing: Programmable-pixel Image Sensors”, 18-month PI Review Meeting (with S. Narasimhan, K. Kutulakos), Arlington, VA, Sept. 26, 2017.“Electrochemical Monitoring of Epilepsy: the Technology,” Invited Talk, 2017 EpLink Fellows Meeting, University of Toronto, Faculty of Medicine, Apr. 7, 2017. “Pixel-programmable Structured-Light CMOS Imagers,” Annual Meeting, Orlando, FL, Mar. 14, 2017.“Pixel-programmable Structured-Light Imaging Device Design,” Site Visit, Pittsburgh, PA, January 30, 2017. “Brain Synchrony-Contingent Neurostimulators for Treatment of Drug-Resistant Epilepsy,” Invited Plenary Talk, 2016 Anne & Max Tanenbaum Symposium on The Frontiers of Science “Listening and Responding to the Brain: Neuroengineering and Epilepsy,” University of Toronto, Faculty of Medicine, November 2, 2016. “Energy-Efficient Computational Light Transport Parsing: Imaging Device Design,” Progress Meeting, Washington, DC, September 14, 2016.“Electronic Microsystems for Intracranial Monitoring, Diagnostics and Treatment of Neurological Disorders,” Seminar, Department of Electrical and Electronic Engineering, Imperial College London, September 5, 2016.“Integrated Circuits for Electrochemical Sensing: Microsystems and Applications,” Seminar, Department of Electrical and Electronic Engineering, Imperial College London, August 26, 2016.“Brain Synchrony-Contingent Neurostimulators for Treatment of Drug-resistant Epilepsy,” Invited Talk on New Medical Devices and Neuromodulation, 13th EILAT Conference on New Antiepileptic Drugs and Devices, June 29, 2016.“Trade-offs Between Wireless Communication and Computation in Closed-loop Implantable Devices,” Invited Talk on Brain Interfaces, IEEE Int. Symp. on Circuits and Systems, May 23, 2016.“Microsystems for Intracranial Monitoring, Diagnostics and Treatment of Neurological Disorders,” Seminar, Department of Biomedical Engineering, Florida International University, April 13, 2016.“Multi-sensor Integrated Circuits: Biomedical Microsystems and Applications,” Seminar, Departments of Electrical and Biomedical Engineering, Columbia University, December 15, 2015.“SSC/CAS Societies Members Brain-Related Research Activities Overview,” IEEE Brain Initiative Workshop, New York, December 14, 2015.“Multi-sensor Integrated Circuits: Microsystems and Biomedical Applications,” Seminar, Department of Electrical Engineering, Princeton University, December 11, 2015.“Multi-sensor Integrated Circuits: Materials, Systems and Applications,” Seminar, Brockhouse Institute for Materials Research, McMaster University, November 2, 2015.“Implantable Wireless Closed-Loop Neurostimulators for the Treatment of Intractable Epilepsy,” IEEE International Symposium on Circuits and Systems, John Choma Commemorative Session, Lisbon, Portugal, May 25, 2015.“Wireless Microelectronic Implants for the Treatment of Intractable Epilepsy,” Ontario Brain Institute, EpLink Workshop, Toronto, ON, February 28, 2015.“Implantable Electronic Microchips for Automated Monitoring, Diagnostics, and Treatment of Neurological Disorders,” Sunnybrook Health Sciences Centre, Brain Sciences Program and Department of Otolaryngology, Toronto, ON, January 29, 2015.“Sensory Biomedical Electronics: Implantable, Wearable and Disposable Integrated Circuits,” Douglas Mental Health University Institute and McGill University, Montreal, QC, June 14, 2013.“Sensory Biomedical Electronics: Implantable, Wearable and Disposable Integrated Circuits,” Department of Electrical and Computer Engineering, McGill University, June 17, 2013.“CMOS Intelligent Sensory Microsystems for Biomedical Applications,” Georgia Institute of Technology, Atlanta, GA, June 21, 2011.“Implantable Integrated Circuits for Monitoring, Diagnostics and Treatment of Neurological Disorders,” Research Institute for Neurosciences and Mental Health, The Hospital for Sick Children, Toronto, ON, March 16, 2011.“Amperometric Neurochemical Microarrays: Electronic Chips that Image Neurotransmitters,” Toronto Western Hospital, Cell and Molecular Neurobiology Lab, Toronto, ON, January 19, 2011.“Towards Wireless Brain Activity Monitoring and Modulation,” CMC Microsystems Sensor Network Workshop, Ottawa, ON, October 6, 2010.“Amperometric Neurochemical and DNA Microarrays,” CMC Microsystems Annual Symposium, Ottawa, ON, October 5, 2010. “Electronic Microchips for Recording and Modulating Neural Activity,” Beyond Brain Machine Interface: From Senses to Cognition Workshop, Long Beach, CA, June 20, 2010.“Intelligent Sensory Microsystems for Biomedical Applications,” IMEC, Leuven, Belgium, May 28, 2010.“CMOS Luminescence Contact Imaging Microsystems,” CMC CMOS Imagers Workshop, Montreal, QC, November 5, 2009.“Intelligent Sensory Microsystems,” CMC Microsystems, Kingston, ON, October 22, 2009.“Intelligent Sensory Microsystems for Biomedical Applications,” Department of Bioengineering, University of California, San Diego, CA, August 10, 2009.“Intelligent Sensory Microsystems” Max Planck Institute for Metals Research, Stuttgart, Germany, May 7, 2009. “Intelligent Sensory Microsystems: Signal Processing,” Max Planck Institute for Biological Cybernetics, Tubingen, Germany, May 5, 2009.“Intelligent Sensory Microsystems: Information Acquisition,” Max Planck Institute for Biological Cybernetics, Tubingen, Germany, May 4, 2009.“Hybrid Intelligent Sensory Microsystems,” CMC Hybrid Integration Workshop, Toronto, ON, January 14, 2009.“Electro-Chemical Integrated Neural Interfaces,” National Research Council (NRC) of Canada, Neurochip Development Initiative - Strategic Meeting, Invited Talk, Ottawa, ON, November 2006. “Electro-Chemical Integrated Neural Interfaces,” National Research Council (NRC) of Canada, Institute for Biological Sciences, Invited Seminar, Ottawa, ON, October 2006.“Kerneltron: Massively Parallel Mixed-Signal VLSI Pattern Recognition Processor,” Centre for Vision Research, York University, Toronto, ON, March 11, 2005.“Kerneltron: Massively Parallel Mixed-Signal VLSI Pattern Recognition Processor,” IEEE EDS/CAS Western New York Conference, Invited Plenary Talk, Rochester, NY, Nov. 3, 2004.“A 1GMACS/mW Mixed-Signal Differential-Charge CID/DRAM Processor,” IEEE Int. Conf. on Circuits and Systems for Communications (ICCSC’04), Invited Plenary Talk, Moscow, Russia, June 30 - July 2, 2004.“Kerneltron: Massively Parallel Mixed-Signal VLSI Pattern Recognition Processor,” Invited Seminar, Rochester Institute of Technology, Rochester, NY, Apr. 30, 2004.“Kerneltron: Support Vector ‘Machine’ in Silicon,” VLSI Seminar Series, School of Electrical and Computer Engineering, Cornell University, Ithaca, NY, Nov.13, 2003. |
| PROFESSIONAL ACTIVITIES |
|  | Associate Editor: IEEE Transactions on Biomedical Circuits and Systems, 2006-present.IEEE Transactions on Circuits and Systems-II: Express Briefs, 2010-2012.IEEE Signal Processing Letters, 2008-2010. Guest Associate Editor: IEEE Journal of Solid-State Circuits, Special Issue on papers from the International Solid-State Circuits Conference (ISSCC), 2016.IEEE Transactions on Biomedical Circuits and Systems, Special Issue/Section on papers from the International Solid-State Circuits Conference (ISSCC), 2014-2024.International Technical Program Committee Member, IEEE Solid-State Circuits Conference (ISSCC):Member of Imagers, MEMS, Medical, and Displays (IMMD) Subcommittee, 2013-2016.Member of Forum Committee: “Circuit, Systems and Data Processing for Next Generation Wearable and Implantable Medical Devices,” 2015-2016.Member of Demonstrations Subcommittee, 2013-2014.Technical Program Committee Member, IEEE European Solid-State Circuits Conference (ESSCIRC):Member of Sensors, Imagers and Biomedical Subcommittee, 2019.Technical Program Committee Member: IEEE International Symposium on Circuits and Systems (ISCAS), 2016, 2020, 2027.IEEE Biomedical Circuits and Systems Conference (BioCAS), 2007, 2008, 2011, 2019, 2023.IEEE Northeast Workshop on Circuits and Systems (NEWCAS), 2006, 2007, 2008, 2009, 2016.IEEE Midwest Symposium on Circuits and Systems (MWSCAS, joint with NEWCAS), 2007.IEEE 6th Electro/Information Technology Conference, 2006.SPIE Bioengineered and Bioinspired Systems Conference, 2003, 2005.ACM Great Lakes Symposium on VLSI (GLSVLSI), 2003.Steering Committee Member:IEEE Brain Initiative, Conferences Sub-committee, 2015-2016.Scientific Review Panel Member:National Institutes of Health (NIH), National Institute of Neurological Disorders and Stroke (NINDS), the Brain Research through Advancing Innovative Neurotechnologies (BRAIN) initiative, 2014-2017.National Sciences and Engineering Research Council of Canada (NSERC) Strategic Projects Selection Panel, 2008-2009.CMC Microelectronics, National IC Fabrication Allocation Committee, 2009-2011. Technical Program Co-chair: IEEE Biomedical Circuits and Systems Conference (BioCAS), 2007.Tutorials Committee Co-chair: IEEE Biomedical Circuits and Systems Conference (BioCAS), 2011.IEEE Biomedical Circuits and Systems Conference (BioCAS), 2019.Track Chair/Co-chair: IEEE International Conference of the Engineering in Medicine and Biology Society (EMBC), Neural Microsystems and Instrumentation Track Co-chair, 2006.IEEE Latin American Symposium on Circuits and Systems (LASCAS), Sensor Circuits and Systems Track Co-Chair, 2023.Special Sessions Committee Co-chair: IEEE Northeast Workshop on Circuits and Systems (NEWCAS), 2016.IEEE International Symposium on Circuits and Systems (ISCAS), 2020.External Advisory Board Member: Department of Electrical Engineering, Rochester Institute of Technology, 2004-2010.Professional Society Member: Institute of Electrical and Electronic Engineers (IEEE). Circuits and Systems (CAS) Society. Solid-State Circuits (SSC) Society. Engineering in Medicine and Biology (EMB) Society.Technical Committee Member: Analog Signal Processing TC of IEEE CAS Society. Neural Systems and Applications TC of IEEE CAS Society. Biomedical Circuits and Systems TC of IEEE CAS Society. Sensory Systems TC of IEEE CAS Society. Session Organizer/Co-organizer: “Smart Optogenetic Bio-electronic Interfaces,” Special Invited Session (BioCAS), 2015.“Electrochemical Sensory Microsystems,” Special Invited Session (BioCAS), 2007.“Integrated Neural Implants,” Special Invited Session (ISCAS), 2007.“Integrated Neural Interfaces,” Special Invited Session (ISCAS), 2006.International Liaison: IEEE Solid-State Circuits Society, Liaison to professional societies the fields of Medicine and Biology, 2015-2019.IEEE Biomedical Circuits and Systems Conference (BioCAS), 2016. IEEE 4th International Symposium on Electronic Design, Test and Applications, 2008.Conference Review Committee Member:Review Committee, IEEE International Symposium on Circuits and Systems (ISCAS), 2003-2009.Industry and Exhibitions Co-chair: IEEE International Symposium on Circuits and Systems (ISCAS), 2016.Conference Session Chair/Co-chair: IEEE International Symposium Circuits and Systems (ISCAS): “Self-Correcting ADC,” 2002; “Neural Systems and Applications,” 2004; “Neural Computation,” “Neural Classifiers,” 2005; “Medical Interfacing System,” “Integrated Neural Interfaces” (Special Session), “Switched Capacitor Circuits,” “Analog Filtering & Signal Processing,” 2006; “Integrated Neural Implants” (Special Session), 2007; “Biomedical Circuits and Systems for Neural Recording,” 2009.IEEE Biomedical Circuits and Systems Conference (BioCAS), “Electrochemical Sensory Microsystems,” “Bio-Signal Processing,” 2007.SPIE International Symposium on Microtechnologies, Bioengineered and Bioinspired Systems, “Biosensors,” 2003.Canadian Microelectronics Corporation / CMC Microsystems, Representative from the University of Toronto, 2010-current.University/Department Committees Member: Electronics Group, Chair, 2015-2017.Graduate Matters Committee, 2014-2017.Examinations Committee, Faculty of Engineering, 2018-2021.Awards Committee, Department of Electrical and Computer Engineering, 2012-2013, 2015-2016.OGS Panel Member, University of Toronto, 2009-2010, 2011-2012.Graduate Coordinator, Electronics Group, Department of Electrical and Computer Engineering, 2008-2010, 2011-2014.Awards and Scholarships Committee, Faculty of Applied Science and Engineering, 2007-2010.Curriculum Matters Committee, Department of Electrical and Computer Engineering, 2005-2010, 2011-2013, 2019-2021.PTR Committee, Department of Electrical and Computer Engineering, 2020-2022. |
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