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Biography

Jie Chen received his B.Sc and M.Sc degrees in Electrical Engineering from Fudan University, China, and his second M.Sc and Ph.D. degrees in Electrical and Computer Engineering from the University of Maryland at College Park, USA. He is currently a professor in the Department of Electrical and Computer Engineering and an adjunct professor in the Department of Biomedical Engineering at the University of Alberta. He is also a research officer at the National Research Council / National Institute for Nanotechnology, Canada. Dr. Chen is a Fellow of the Institute of Electrical and Electronics Engineers (IEEE), a Fellow of the Canadian Academy of Engineering, as well as a Fellow of the Engineering Institute of Canada. He has co-authored the book Design of Digital Video Coding Systems – A Complete Compressed Domain Approach (Marcel Dekker, 2001) and has co-edited the reference book Genomic Signal Processing and Statistics (European Applied Signal Processing 2005). He has contributed over 92 journal articles and 83 conference proceeding papers. His i10-index is 61 according to the Google Scholar as of February 2017. He holds ten patents, several of which have been used either in production or licensed by various companies. Dr. Chen was elected as an IEEE Distinguished Lecturer in the Circuits and Systems Society (2016-2017). His supervised students received the Best Student Paper award at the IEEE/National Institutes of Health (NIH) Life Science Systems & Applications Workshop 2007. He has supervised or co-supervised a total of 68 highly qualified personnel. Among them, some start their companies; some continue their graduate studies (one entered Stanford University, and one joined Yale Medical University). One student became an assistant professor at Johns Hopkins University.

Dr. Chen is the recipient of several prestigious awards including the Killam Annual Professorship Award 2015-2016 (one of the highest honours to a professor in Canadian Universities for outstanding contributions in teaching, research and community services), McCalla Professorship Recipient 2016-2017 (One of the highest honours given to a professor at the Universities of Alberta), Thousand People Plan Professor (Shanghai, China supported by Fudan University) in 2017, the Best Poster award given by the International Union of Crystallography at the Conference of Biology and Synchrotron Radiation 2013, and a Canada Foundation for Innovation Leaders' Opportunity Award in 2011. He received the Member of the Year Award from the Association of Chinese Canadian Professors in recognition of his outstanding leadership in 2012. He serves as a steering committee member for the IEEE Journal of Translation Engineering in Health and Medicine, as well as an associate editor for IEEE Trans. on Biomedical Circuits and Systems. He also served as an associate editor for IEEE Trans. on Multimedia, and IEEE Signal Processing Magazine, and served as a guest editor of several special issues. His collaborative research related to the design of a miniaturized ultrasound device for intra-oral dental tissue formation was included in a Reader's Digest list of major medical breakthroughs in Canada in 2006. The invention has been reported in over 20 news/media publications worldwide, and was cited in a front-page report in Canada's national newspaper, The Globe and Mail, June 28, 2006. The device has

received Health Canada approval in 2016. Dr. Chen also helped establish two Bell-Lab spin-off companies. One company focusing on developing the 4th-generation wireless network was acquired by QUALCOMM in San Diego in 2005. The other, www.ibiquity.com, produces digital HD-radios installed in most brands of cars worldwide and sold in most retail stores.

Research interests Over the past ten years, Dr. Chen's interdisciplinary research areas include:

- **VLSI and Low-Power Circuits**: Designing low-power fault-tolerant nanoscale devices and circuits based on probabilistic-based Markov Random Field theory;
- **Biomedical and Healthcare Devices**: Developing a low-intensity pulsed-ultrasound technology platform to stimulate cell growth (with applications in cell therapy, tissue engineering, mental health, and antibody production), and microorganism growth (with applications in enhancing sludge activities for wastewater treatment, increasing renewable biofuel/algal oil, antibiotics, omega-3, and wine/beverage production).
- **MEMS/NMES-based Biosensors**: Designing portable impedance-based point-of-care biosensors for detecting metabolic biomarkers, screening cancer biomarkers, testing environmental toxins, monitoring pathogens for food safety, and sensing plant infections at an early stage.
- **Functional Nanomaterials**: Building functional nanomaterials for in vivo gene/peptide/microRNA delivery (especially across the blood-brain barrier), targeted cancer imaging and treatment, gene transformation of agricultural products, and water filtration (removal of microorganisms, organic chemicals, and heavy metals).