

**Title:**

Synergistic Evolution: The Convergence of Signal Processing, Communication Technologies and Computational Intelligence for Smart Energy Systems

**Abstract:**

From microwatts to gigawatts, Power Electronics, operates behind the scenes as a critical technology that drives various daily applications, plays a central role in efficiently and flexibly converting, controlling, and transmitting energy. It is projected that by 2030, as much as 80 percent of global electric power will depend on various forms of power electronics systems. This expansion is fueled by notable progress in microelectronics, embedded systems, power semiconductor devices, and communication technologies. This keynote address will investigate the transformative potential of merging Signal Processing, Communication technologies, and Computational Intelligence (SPCC) with power electronics to revolutionize smart energy systems. The discussion will illustrate how this integration can enhance energy efficiency, fortify system stability, and establish a path towards a sustainable energy future.

Furthermore, the discourse will underscore the interdisciplinary essence of this amalgamation, welcoming diverse fields to involve in reshaping the energy technology sphere. Through collaborative endeavors and innovative solutions, the fusion of SPCC and power electronics stands to unveil fresh opportunities in energy management, grid integration, and the utilization of renewable energy sources.

**Biography:**

Henry Shu-Hung Chung received the B.Eng. and Ph.D. degrees in electrical engineering from Hong Kong Polytechnic University, Hong Kong, in 1991 and 1994, respectively.

Since 1995, he has been with the City University of Hong Kong, where he is currently the Dean of Students, a Chair Professor with the Department of Electrical Engineering, and the Director of the Centre for Smart Energy Conversion and Utilization Research. He has published two books, authored ten research book chapters, and more than 500 technical papers including 250 refereed journal papers in his research areas, and holds 80 patents. His current research interests include renewable energy conversion technologies, lighting technologies, energy harvesting, smart grid technologies, and computational intelligence for power electronic systems.

Dr. Ching is Fellow of IEEE. He was recipient of 2021 IEEE PELS R. David Middlebrook Achievement Award for his contribution to energy utilization technologies for smart cities. He received CityU Outstanding Research Award in 2020 and CityU Teaching Excellence Awards in 2018 and 2022, respectively. He is currently an Associate Editor for the IEEE Transactions on Power Electronics and the IEEE Journal of Emerging and Selected Topics in Power Electronics. He was the Editor-in-Chief of the IEEE Power Electronics Letters 2014–2018. He was also the Chair of the Technical Committee of the High-Performance and Emerging Technologies, IEEE Power Electronics Society in 2010–2014. He was the recipient of numerous industrial awards for his invented energy saving technologies.