

## Curriculum Vitae

**Name** : CHUNG Shu hung, Henry (鍾樹鴻)

**Marital Status** : Married, two daughters

**Date of Birth** : Jan. 25, 1966

**Area of Specialism** : Power Electronics

**Contact Address** : Dept. of Electrical Engineering, City University of Hong Kong, Tat Chee Avenue, Kowloon Tong, Kowloon, Hong Kong.

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**Educational Qualifications** :

Year	Award	Discipline	Institution
1994	Doctor of Philosophy	Power Electronics	Hong Kong Polytechnic University
1991	Bachelor (First Class Honours)	Electrical Engineering	Hong Kong Polytechnic University
1988	Higher Diploma (Distinction)	Electrical Engineering	Hong Kong Polytechnic University
1985		Secondary School	Raimondi College
1983		Primary and secondary	St. Joan of Arc School

**Membership of Professional Bodies:** Fellow of HKIE and Fellow of IEEE

**H-index:** 74 (Google Scholar)

### Appointments

2021 - Dean of Students, City University of Hong Kong (*CityU*)

2019 - Chair Professor of Electrical Engineering, *CityU*

2011 - Director, *Centre for Smart Energy Conversion and Utilization Research, CityU*

2019 - Residence Master, Hall 10, Student Residence, *CityU*

2019 - 2021 Associate Dean (Research), College of Engineering, *CityU*

2016 - 2019 Assistant Head, Department of Electronic Engineering, *CityU*

2013 - 2016 Specially Appointed Chair Professor under Eastern Scholar Award Program

2005 – 2019

- Professor, *City University of Hong Kong*
- Director, *Centre for Smart Energy Conversion and Utilization Research, CityU*
- Visiting professor, *SUN Yat-Sen University, China*
- Affiliate Professor, School of Energy and Environment, *CityU*

2006 – 2010

- Associate Dean, College of Science and Engineering, *CityU*
- Chief Technical Officer, *e.Energy Technology Limited (An Associated Company of the CityU Enterprises Limited - [www.eenergy.com.hk](http://www.eenergy.com.hk))*

1998 - 2005

- Associate Professor, *City University of Hong Kong*
- Chief Technical Officer, *e.Energy Technology Limited (An Associated Company of the CityU Enterprises Limited - [www.eenergy.com.hk](http://www.eenergy.com.hk))*

1995 - 1998 Assistant Professor, *City University of Hong Kong*

1994 - 1995 Electronic Engineer, *Bert Corporation Ltd.*

## Prizes, Scholarships, and Records

- [1] 2021 IEEE PELS (Power Electronics Society) R. David Middlebrook Achievement Award (For Energy Utilization Technologies for Smart Cities)
- [2] CityU Outstanding Research Award 2020
- [3] Natural Science Prize of Shanghai (Second Class) by the Shanghai Municipal People's Government for the project "Research into Advanced Inverter Topologies for Renewable Energy Generation and Energy Storage Integration into AC Grid", Jan 2019.
- [4] Best Paper Award at ECCE 2017 conference, for the paper, entitled "Design of a Wireless Power Transfer System for Devices Carried by a Freely Moving Animal in Cage," selected by the Technical Committee on High Performance and Emerging Technologies, IEEE Power Electronics Society, on Sep 25 2018.
- [5] CityU Teaching Excellence Award 2018.
- [6] CSE Discovery and Innovation Gala Award 2016 for the project entitled "Intelligent Battery Tester".
- [7] Best Paper Award at ECCE 2015 conference, for the paper, entitled "Modeling and Experimentation of Loosely-Coupled Coils with Transmitter Having Orthogonally-Placed Windings," selected by the Technical Committee on High Performance and Emerging Technologies, IEEE Power Electronics Society, on Sep 20 2016.
- [8] The President's Award 2016.
- [9] Second Prize for ECCE 2014 conference, for the paper, entitled "Inductive Power Transfer System for Driving Multiple OLED Lighting Panels", selected by the Renewable and Sustainable Energy Conversion Systems Committee of the Industry Applications Society, on Sep 22, 2015.
- [10] The HKIE Outstanding Paper Award for Young Engineers/researchers 2015, Hong Kong Institution of Engineers
- [11] Eastern Scholar Award, Shanghai Institutions of Higher Education, Jan 15, 2013.
- [12] Excellent Product Awards for two projects "*An Apparatus for Reducing DC-link Capacitance*" and "*LED Replacement Lamp Driver with Universal Compatibility*" at the 14th China Hi-Tech Fair, Shenzhen, China, Nov 16-21, 2012
- [13] Innovation and creativity Award, 2011 Hong Kong Awards for Industries
- [14] Silver Award, Best Green ICT Award (Adoption – SME), 2011
- [15] The HKIE Outstanding Paper Award for Young Engineers/researchers 2010, Hong Kong Institution of Engineers
- [16] First Class Prize in the Natural Science Award 2009, Ministry of Education, PRC
- [17] Machinery and Machine Tools Design Award, 2009 Hong Kong Awards for Industries
- [18] Outstanding Teacher Awards, Dept. of Electronic Engineering, CityU, first prize in 2008/09, 2010/2011, and 2013/2014, and second prize in 2009/2010, 2011/2012, 2012/2013, 2014/2015, 2017/2018.
- [19] Notable Mention, Hong Kong Eco-Products Award 2006
- [20] Best New Product 2005 award, Australia Electrical and Electronic Manufacture's Association (AEEMA)
- [21] Consumer Product Design Award, Hong Kong Awards for Industries 2004
- [22] Technological Achievement Award, Hong Kong Awards for Industries 2001
- [23] Grand award in the 3<sup>rd</sup> Applied Research Excellence Award Competition
- [24] Silver Prize in International Chinese Invention Expo '98

- [25] *Who's Who in the World*, 16<sup>th</sup> Edition.
- [26] *Dictionary of International Biography*, 28<sup>th</sup> Edition
- [27] Li Po Chun Scholarship
- [28] NanShing/Nanco Scholarships [Twice]
- [29] China Light and Power Prize
- [30] Sir Edward Youde Memorial Fund Scholarship
- [31] Sir Edward Youde Memorial Fund Fellowship
- [32] Taipei Trade Centre Scholarship
- [33] Croucher Foundation Scholarship.

## **Publications**

### *Book*

- [1] *Reliability of Power Electronic Converter Systems*, edited by **Henry Shu-hung Chung**, Frede Blaabjerg, Huai Wang, and Michael Pecht, IET Research Book, September 2015.

### *Book Chapters*

- [1] S.Y.R. Hui and **H. Chung**, "Resonant and Soft-Switching Converters," ***Power Electronics Handbook***, edited by M. H. Rashid, Academic Press, 2000, pp. 271-304.
- [2] J. Zhang, **H. Chung**, S.Y.R. Hui, W.L. Lo, and A. Wu, "Decoupled Optimization of Power Electronics Circuits Using Genetic Algorithm," ***Practical Handbook of Genetic Algorithms – Applications***, edited by L. Chambers, CRC Press, 2000, pp. 135-166.
- [3] **H. Chung**, E. Tam, W. L. Lo, S.Y.R. Hui, "An optimized fuzzy logic controller for active power factor corrector using genetic algorithms," ***Practical Handbook of Genetic Algorithms – Applications***, edited by L. Chambers, CRC Press, 2000, pp. 363-390.
- [4] **H. Chung**, S.Y.R. Hui, K.K. Tse, "Use of chaotic switching for EMI suppression in power converters," ***Chaos in Circuits and Systems***, edited by G. Chen and T. Ueta, World Scientific, 2002, pp. 341-365.
- [5] Jun ZHANG, **H. Chung**, W.L. Lo, and B.J. Hu "Fuzzy Knowledge Incorporation in Crossover and Mutation", ***Knowledge Incorporation in Evolutionary Computation Series: Studies in Fuzziness and Soft Computing***, edited by Yaochu Jin, Springer Press, 2004, ISBN:3-540-22902-7, pp. 123-143.
- [6] S.Y.R. Hui and **H. Chung**, "Resonant and Soft-Switching Converters," ***Power Electronics Handbook***, edited by M. H. Rashid, Academic Press, 2006, pp. 405-449.
- [7] **H. Chung**, "Chapter 6 - Minimization of DC Link Capacitance in Power Electronic Converter systems," ***Reliability of Power Electronic Converter Systems***, edited by Henry Shu-hung Chung, Huai Wang, Frede Blaabjerg, and Michael Pecht, IET Research Book, September 2015, pp. 141-163.
- [8] H. Wang, F. Blaabjerg, **H. Chung**, and M. Pecht, "Reliability Engineering in Power Electronic Converter systems," ***Reliability of Power Electronic Converter Systems***, edited by Henry Shu-hung Chung, Frede Blaabjerg, Huai Wang, and Michael Pecht, IET Research Book, September 2015, pp. 1-30.
- [9] W. Wang, H. Chung, J. Zhang, and W.L. Lo, "Chapter 15 - Use of Computational Intelligence for Designing Power Electronic Converters," ***Control Circuits in Power Electronics: Practical Issues in Design and Implementation*** edited by Miguel Castilla, IET Research Book, pp. 407- 426, March 2016.

*Journal Papers :*

- [1] S.V. Cheong, **H. Chung**, and A. Ioinovici, "Duty-cycle Control Boosts DC-DC Converters," *IEEE Circuits and Devices*, vol. 9, no. 2, Mar. 1993, pp. 36-37.
- [2] **H. Chung** and A. Ioinovici, "Fast Computer-Aided Simulation of Switching Power Regulators Based on Progressive Analysis of the Switches' State," *IEEE Trans. Power Electronics*, vol. 9, no. 2, pp. 206-212, Mar., 1994.
- [3] S.V. Cheong, **H. Chung**, and A. Ioinovici, "Inductorless DC-to-DC Converter with High Power Density," *IEEE Trans. Ind. Electronics*, vol. 41, no. 2, pp. 208-215, Apr. 1994.
- [4] **H. Chung** and A. Ioinovici, "Local and Global Stability of Switching Regulators," Special Issue on Power Electronics, *Journal of Circuits, Systems, and Computers* vol. 5, no. 3, pp. 305-315, Sept. 1995.
- [5] **H. Chung**, S.Y.R. Hui, and K.K. Tse, "Reduction of EMI Emission from Power Converter Using Soft-Switching Technique," *IEE Electronics Letter*, vol. 32, no. 11, pp. 977-979, 1996.
- [6] Y. Shrivastava, S.Y.R. Hui, S. Sathiakumar, **H. Chung**, K.K. Tse, "Effects of continuous noise in randomised switching dc-dc converters," *IEE Electronics Letter*, vol. 33, no. 11, pp. 919-921, 1997.
- [7] **H. Chung**, "Simulation of PWM Switching Regulators Using Linear Output Predictions and Corrections," *IEEE Trans. Circuits Syst. - Part I*, vol. 44, no. 7, pp. 636-639, Jul. 1997.
- [8] S.Y.R. Hui and **H. Chung**, "Parallelism of power converters for automatic power factor correction," *IEE Electronics Letter*, vol. 33, no. 15, pp. 1274-1276, Jul. 1997.
- [9] **H. Chung** and A. Ioinovici, "Design of Feedback Gain Vector of Two-State Basic PWM Multi-Feedback Regulators for Large-Signal Stability", *IEEE Trans. Circuits Syst. - Part I*, vol. 44, no. 8, pp. 676-683, Aug 1997.
- [10] B.K.H. Wong and **H. Chung**, "A general-oriented simulation technique for the power electronic systems using quadratic branch voltage extrapolations," *IEEE Trans. Ind. Electron.*, vol. 44, no. 4, pp. 492-501, Aug. 1997.
- [11] **H. Chung**, K.K. Tse, and A. Ioinovici, "Computer-aided analysis of power electronic circuits by stepwise topological identification," *Int. J. Numerical Modelling, Electron. Networks, Devices and Fields*. vol. 10, no. 5, pp. 285-301, Dept/Oct 1997.
- [12] K.K. Tse and **H. Chung**, "Decoupled technique for the simulation of PWM switching regulators using second order output extrapolations," *IEEE Trans. Power Electron.*, vol. 13, no. 2, pp. 222-234, Mar. 1998.
- [13] B.K.H. Wong and **H. Chung**, "An Efficient Technique for the Time-Domain Simulation of Power Electronic Circuits," *IEEE Trans. Circuits Syst. - Part I*, vol. 45, pp. 364-376, Apr. 1998.
- [14] S.Y.R. Hui, S.C. Tang, and **H. Chung**, "Coreless Printed-Circuit Board (PCB) Transformers for Signal and Energy Transfer," *IEE Electronics Letters*, vol. 34, no. 11, pp. 1052-1054, May 1998.
- [15] B.K.H. Wong and **H. Chung**, "Steady-state analysis of PWM dc/dc switching regulators using iterative cycle time-domain simulation," *IEEE Trans. Ind. Electron.*, vol. 45, no. 3, pp. 421-432, June 1998.
- [16] **H. Chung**, S.Y.R. Hui, and W.H. Wang, "An Isolated ZVS/ZCS Flyback Converter using the Leakage Inductance of the Transformer," *IEEE Trans. Ind. Electron.*, vol. 45, no. 4, pp. 679-682, Aug. 1998.
- [17] **H. Chung**, S.Y.R. Hui, and K.K. Tse, "Reduction of Power Converter EMI Emission Using Soft-Switching Technique," *IEEE Trans. Electromagnetic Compatibility*, vol. 40, no. 3, pp. 282-287, Aug. 1998.
- [18] Y. Shrivastava, S.Y.R. Hui, S. Sathiakumar, K.K. Tse, and **H. Chung**, "A comparison of nondeterministic and deterministic switching methods for dc-dc converters," *IEEE Trans. Power Electron.*, vol. 13, no. 6, pp. 1046-1055, Nov. 1998.

- [19] K.K. Tse, **H. Chung**, and S.Y.R. Hui, "Stepwise Quadratic State-Space Modeling Technique for Simulation of Power Electronics Circuits," *IEEE Trans. Ind. Electron.*, vol. 46, no. 1, pp. 91-99, Feb. 1999.
- [20] **H. Chung**, S.Y.R. Hui, and W.H. Wang, "A zero-current-switching PWM Flyback Converter with a simple auxiliary switch," *IEEE Trans. Power Electron.*, vol. 14, no. 2, pp. 329-342, Mar. 1999.
- [21] S.Y.R. Hui and **H. Chung**, "Paralleling Power Converters for AC-DC Step-Down Power Conversion with Inherent Power Factor Correction," *IEE Proceedings - Electric Power Applications*, vol. 146, no. 2, pp. 247-252, Mar. 1999.
- [22] B.K.H. Wong and **H. Chung**, "Dual-Loop Iteration Algorithm for Steady-State Determination of Current-Programmed DC/DC Switching Converters," *IEEE Trans. Circuits Syst. - Part I*, vol. 46, no. 4, pp. 521-526, April. 1999.
- [23] S.Y.R. Hui, **H. Chung**, S.C. Tang, "Coreless-based Transformers for Power MOSFET/IGBT Gate Drive Circuits," *IEEE Trans. Power Electron.*, vol. 14, no. 3, pp. 422-430, May 1999.
- [24] S.C. Tang, S.Y.R. Hui, and **H. Chung**, "Coreless PCB Transformer with Multiple Secondary Windings for Complementary Gate Drive Circuits," *IEEE Trans. Power Electron.*, vol. 14, no. 3, pp. 431-437, May 1999.
- [25] S.Y.R. Hui, S.C. Tang, and **H. Chung**, "Optimal Operation of Coreless PCB Transformer-Isolated Gate Drive Circuits with Wide Switching Frequency Range," *IEEE Trans. Power Electron.*, vol. 14, no. 3, pp. 506-514, May 1999.
- [26] C.M. Wu, W.H. Lau, **H. Chung**, "Analytical Technique for Calculation of Output Harmonics in H-Bridge Inverter Output with Dead Time," *IEEE Trans. Circuits Syst. - Part I*, vol. 46, no. 5, pp. 617-627, May 1999.
- [27] B.K.H. Wong and **H. Chung**, "Time-Domain Simulation of Power Electronics Circuits Using State Variable Quadratic Extrapolations," *IEEE Trans. Circuits Syst. - Part I*, vol. 46, no. 6, pp. 751-756, June 1999.
- [28] **H. Chung** and Y.K. Mok, "Development of Switched-Capacitor DC/DC Boost Converter with Continuous Input Current Waveform," *IEEE Trans. Circuits Syst. - Part I*, vol. 46, no. 6, pp. 756-759, June 1999.
- [29] **H. Chung**, "Design and Analysis of a Switched-Capacitor-Based Step-up DC-DC Converter with Continuous Input Current," *IEEE Trans. Circuits Syst. - Part I*, vol. 46, no. 6, pp. 722-730, June 1999.
- [30] S.Y.R. Hui, Y.K.E. Ho, and **H. Chung**, "Modular single-stage, 3-phase full-bridge converter with inherent power factor correction and isolated output," *IEE Proceedings - Electric Power Applications*, vol. 146, no. 4, pp. 407-414, Jul. 1999.
- [31] K.K. Tse, **H. Chung**, and S.Y.R. Hui, "Quadratic State-Space Modeling Technique for Analysis and Simulation of Power Electronic Converters" *IEEE Trans. Power Electron.*, vol. 14, no. 6, pp. 1086-1100, Nov. 1999.
- [32] B. K. H. Wong and **H. Chung**, "A Systematic Graphing Technique for Small-Signal Low Frequency Characterization of PWM DC/DC Converters," *IEEE Trans. Ind. Electron.*, vol. 47, no. 1, pp. 45-54, Feb. 2000.
- [33] W.H. Lau, **H. Chung**, N.K. Poon, and C.M. Wu, "Realization of Digital Amplifier Using Soft-switched PWM Power Converter," *IEEE Trans. Circuits Syst. - Part I*, vol. 47, no. 3, pp. 303-311, Mar. 2000.
- [34] K. K. Tse, **H. Chung**, S. Y. R. Hui, and H. C. So "Analysis and spectral characteristics of a spread-spectrum technique for conducted EMI suppression", *IEEE Trans. Power Electron.*, vol. 15, no. 2, pp. 399-410, Mar. 2000.

- [35] K. K. Tse, **H. Chung**, S. Y. R. Hui, and H. C. So “A comparative investigation on the use of random modulation schemes for dc/dc converters,” *IEEE Trans. Ind. Electron.*, vol. 47, no. 2, pp. 245-252, Apr. 2000.
- [36] B. Yi, C.B. Chu, K.S. Chiang, and **H. Chung**, “New design of optical electric-current sensor for sensitivity improvement,” *IEEE Trans. Instrumentation and Measurement*, vol. 49, no. 2, pp. 418-423, Apr. 2000.
- [37] **H. Chung**, S.Y.R. Hui, S.C. Tang, and A.Wu, “On the Use of Current Control Scheme for Switched-Capacitor DC/DC Converters,” *IEEE Trans. Ind. Electron.*, vol. 47, no. 2, pp. 238-244, Apr. 2000.
- [38] Y. Shrivastava, S.Y.R. Hui, S. Sathiakumar, **H. Chung**, and K.K. Tse, “Harmonic analysis of non-deterministic switching methods for dc-dc power converters,” *IEEE Trans. Circuits Syst. - Part I*, vol. 47, no. 6, pp. 868-884, June 2000.
- [39] **H. Chung**, S.Y.R. Hui, and S.C. Tang, “Development of a multi-stage current-controlled switched-capacitor step-down dc/dc converter with continuous input current,” *IEEE Trans. Circuits Syst. - Part I*, vol. 47, no. 7, pp. 1017-1025, July 2000.
- [40] S. C. Tang, S.Y.R. Hui, and **H. Chung**, “Some electromagnetic aspects of coreless PCB transformer,” *IEEE Tran. Power Electron.*, vol. 15, no. 4, pp. 805-810, July 2000.
- [41] **H. Chung**, A. Ioinovici, and J. Zhang “Describing Functions of Power Electronics Circuits Using Progressive Analysis of Circuit Waveforms,” *IEEE Trans. Circuits Syst. - Part I*, vol. 47, no. 7, pp. 1026-1037, July 2000.
- [42] K. K. Tse, **H. Chung**, S. Y. R. Hui, and H. C. So, “Spectral characteristics of randomly switched PWM dc/dc converters operating in discontinuous conduction mode,” *IEEE Trans. Ind. Electron.*, vol. 47, no. 4, pp. 759-769, Aug. 2000.
- [43] S.Y.R. Hui, **H. Chung**, and S.C. Yip, “A bi-directional ac-dc power converter with power factor correction,” *IEEE Trans. Power Electron.*, vol. 15, no. 5, pp. 942-948, Sept. 2000.
- [44] S.Y.R. Hui, S.C. Tang, and **H. Chung**, “Coreless planar printed-circuit-board (PCB) transformers – A new concept for signal and energy transfer,” *IEEE Trans. Power Electron.*, vol. 15, no. 5, pp. 931-941, Sept. 2000.
- [45] **H. Chung**, W.C. Chow, S.Y.R. Hui, and S.T. Lee, “Development of a switched-capacitor dc/dc converter with bi-directional power flow,” *IEEE Trans. Circuits Syst. - Part I*, vol. 47, no. 9, pp. 1383-1389, Sept. 2000.
- [46] B. K. H. Wong, **H. Chung**, and T.S. Lee “Computation of State Variable Sensitivity Matrix of PWM DC/DC Converters and its Applications,” *IEEE Trans. Circuits Syst. - Part I*, vol. 47, no. 10, pp. 1542-1548, Oct. 2000.
- [47] S.C. Tang, S.Y.R. Hui, **H. Chung**, “Characterization of coreless printed circuit board (PCB) transformers,” *IEEE Trans. Power Electron.*, vol. 15, no. 6, pp. 1275-1282, Nov. 2000.
- [48] S.C. Tang, S.Y.R. Hui, and **H. Chung**, “A low-profile low-power converter with coreless PCB isolation transformer,” *IEEE Trans. Power Electron.*, vol. 16, no. 3, pp. 311-315, May 2001.
- [49] S.Y.R. Hui, L. M. Lee, **H. Chung**, Y.K. Ho, “An electronic ballast with wide dimming range, high PF, and low EMI ,” *IEEE Trans. Power Electron.*, Vol. 16, no. 4, pp. 465-472, July 2001.
- [50] S. C. Tang, S.Y.R. Hui, and **H. Chung**, “A low-profile power converter using printed-circuit board (PCB) power transformer with ferrite polymer composite,” *IEEE Trans. Power Electron.*, vol. 16, no. 4, pp. 493-498, July 2001.
- [51] J. Zhang, **H. Chung**, W. L. Lo, S.Y.R. Hui, and A. Wu, “Implementation of a decoupled optimization technique for design of switching regulators using genetic algorithm,” *IEEE Trans. Power Electron.*, vol. 16, no. 6, pp. 752-763, Nov. 2001.

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- [53] S. C. Tang, S.Y.R. Hui, and **H. Chung**, "A low-profile wide-band three-port isolation amplifier with coreless printed-circuit-board (PCB) transformer," *IEEE Trans. Ind. Electron.*, vol. 48, no. 6, pp. 1180-1187, Dec. 2001.
- [54] C. K. Lee, S.Y.R. Hui, and **H. Chung**, Y. Shrivastava, "A randomized voltage vector switching scheme for three-level power inverters," *IEEE Trans. Power Electron.*, vol. 17, no. 1, pp. 94-100, Jan. 2002.
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- [71] Billy M.T. Ho, **H. Chung**, and W.L. Lo, "Use of System Oscillation to Locate the MPP of PV Panels," *IEEE Power Electronics Letter*, vol. 2, no. 1, pp. 1-5, March 2004.
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- [75] Kelvin K.S. Leung and **H. Chung**, "Derivation of a Second-Order Switching Surface in the Boundary Control of Buck Converters," *IEEE Power Electronics Letter*, vol. 2, no. 2, pp. 63-67, June 2004.
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Detroit, United States, 11-15 October 2020, pp 5875-5881, (ISBN: 9781728158266).

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#### **Research Students Supervised:**

**A) Successful supervision :** 16 PhD and 3 MPhil students

*1) Doctor of Philosophy*

- [1] TSE, Kwok Kuen *Analysis of switching power converters using random switching schemes for EMI suppression* (2000)
- [2] WONG, Ka Hou *Development of a unified analysis technique for power electronic circuits* (Jan 1999)
- [3] YIP, Siu Chung *A development of AC/DC converter with bi-directional power flow* (May 2002)
- [4] ZHANG, Jun *Research on using genetic algorithm to design and optimize power electronic circuits* (May 2002)
- [5] LEE, Tsz Sek *Research on dimming technology of electronic ballasts for fluorescent lamps* (Apr 2004)
- [6] HO, Ming Tai *Research on a grid-connected power inversion technique for photovoltaic systems with maximum power point tracking* (Nov 2004)
- [7] LEUNG, Ka Sing *Research on Boundary Control with Second-Order Switching Surface for Power Electronic Systems* (July 2005)
- [8] CHAN, Sau Man *Research on Operating and Integrating Inductive Elements in Dimmable Electronic Ballasts* (July 2005)
- [9] HO, Ngai Man *Research into Dynamic Voltage Regulation and Restoration Technology* (January 2007)
- [10] SONG, Ting ting *Research on High Input Voltage DC-DC Converter with Low Voltage Stress on Switches* (October 2007)
- [11] LI, Tin Ho *Research on High Energy-Efficiency and Fast Dynamic Response Technologies for Grid-Connected Inverter* (September 2010)
- [12] WANG, Huai *New Energy-efficient High-voltage DC-DC Power Conversion Technology* (March 2012)
- [13] CHEN, Nan *Investigation into Power Flow Control of Ballasted Lighting Equipment* (May 2012)
- [14] ZHANG, Ruihong *Investigation into New LED Driving Technologies* (Dec 2013)
- [15] WANG, Jianjing *Characterization and modeling of the switching behavior of Power MOSFET in Power Electronic Systems* (Jan 2014)
- [16] YUEN, Kuen Faat *Research on Active and Passive Overvoltage Suppression Techniques for Inverter-fed Motor Drive Systems* (Apr 2014)

- [17] HE, Yuanbin                    *Advanced Digital Control Strategies for DG-grid Interfacing Converters with High-order Output Filter* (Dec 2016)
- [18] CHOW, Po Wa                *New Coupling and Power Regulation Technologies for Wireless Inductive Links* (Feb 2017)
- [19] CHEUNG, Sui Pung         *Modular-based Power Quality Enhancement Technologies* (Nov 2017)
- [20] TUNG, Chung Pui            *Research on Power Semiconductor Filter Technology for Power Factor Correction* (January 2020)
- [21] WANG, Kewei                *Novel Insights of Linear Power MOSFETs and Their Applications in Switching Converters* (August 2020)

2) *Master of Philosophy*

- [1] LI, Tin Ho                      Development of an Active Modulation Technique for Single-Phase Grid-Connected CSI (December 2006)
- [2] CHIU, Yat Chung            Control of DC/AC Inverter with Low Harmonic Distortion (January 2007)
- [3] LEUNG, Siu wai              *Research on a Zero-Current-Switched (ZCS) isolated Full-Bridge Boost Converter with Multiple Inputs* (January 2007)
- [4] LIU, Chun For                *Diagnostic Technique for Large-scale Battery Systems* (Sep 2021)

**B) Current supervision :**            5 PhD students + 1 MPhil student

**Research Grants Awarded**

**University-Industry Collaboration Programme (Innovation and Technology Commission)**

1. Development of an Energy-efficient Burn-in System for Switching Mode Power Supplies - \$889,950 (Principal Investigator) [9440039 (UIT - 070)][1 Nov, 2004 – 31 Oct, 2006]

**Collaborative Research Project (Innovation and Technology Commission)**

1. A New Generation Smart Inverter for PV Applications - \$2,294,548 (Principal Investigator) [9440085 (GHX/ 004/11)] [1 Mar 2012 – 31 Aug 2014]
2. The Key Technologies of the Energy Storage System – Smart Battery Management System for Distributed Energy Resources - \$2,556,808 (Principal Investigator) [GHP/017/12SZ] [1 Oct 2013 – 30 Sep 2015]
3. Smart and Sustainable Campus - \$3,965,200 (Principal Investigator) [ITS/063/14FX] [1 Mar 2015 – 31 July 2017]
4. Smart real-time battery state and health diagnostics system - \$1,348,975 (Principal Investigator) [ITS/277/14] [1 Jul 2015 – 30 June 2017]
5. Interoperable M2M Service Platform for Global Fleet Management Transportation and Logistics - \$4,900,000 (Co-investigator) [ITP/059/14LI] [1 Mar 2015 – 31 Aug 2016]
6. Remote Online Condition Monitoring and Fault Diagnostic System for Photovoltaic Farms - \$1,304,800 (Principal Investigator) [ITS/308/15] [1 Mar 2016 – 31 Aug 2017]
7. Online Harmonic Filter and Network Monitoring System, \$1,328,629 (Principal Investigator) [ITS/050/16FP] [1 Jan 2017 – 30 Jun 2018]

8. Monolithic Integration of Power Semiconductor Filter Controller for AC/DC Power Conversion Systems, \$ 4,784,082 (Principal Investigator) [ITS/261/16FX] [1 Mar 2017 – 31 Aug 2018]
9. Working Software Tools for Dynamic Base Station Sleeping for Green Cellular Networks, \$1,131,600 (Associate Investigator) [ITS/191/16] [1 Feb 2017 – 31 Jul 2018]
10. Smart Geotechnical Monitoring Architecture, \$4,563,264 (Principal Investigator) [ITS/298/17FX] [1 July 2018 – 31 Mar 2021]
11. Smart Split Charger, \$1,367,416.7 (Principal Investigator) [ITS/388/18] [1 July 2019 – 31 June 2021]
12. Integrated Powertrain with Intelligence System, \$1,369,942.1 (Principal Investigator) [ITS/211/19] [1 July 2020 – 31 Dec 2022]
13. Intelligent Gate Drive Architecture, \$1,384,922 (Principal Investigator) [ITS/051/20] [1 July 2021 – 31 Dec 2023]

#### **Innovation Fund Grand Solutions (Innovation Fund Denmark)**

1. APETT - Advanced Power Electronic Technology and Tools, \$1,142,896 (Research Partner) (9231253) [1 Jan 2017 – 30 Jun 2021]

#### **Central Allocation Grant (Research Grant Council)**

1. An investigation into the use of modern power Electronics Technology for Improving Power Quality and Stability in Power Systems - \$4.5M (Co-Investigator) [8730012 (CityU 1/00C)]

#### **General Research Fund / Competitive Earmarked Research Grants (Research Grant Council)**

1. Development of DC Power Conversion Technique Using Basic Inductorless Converter Cells - \$656,000 (Principal Investigator) [9040207 (CityU1005/96E)] [1 Dec 1996 – 30 Nov 1998]
2. Development of Versatile Switched-Capacitor-Based DC-DC Converters - \$770,000 (Principal Investigator) [9040359 (CityU1082/98E)] [1 Oct 1998 – 30 Sep 2000]
3. Novel Designs of Optical Sensors for Electric Current Measurement - \$842,600 (Co-Investigator) [9040274 (CityU1044/97E)]
4. Development of High Power Digital Audio Amplifier using Multilevel Inverter - \$405,000 (Co-investigator) [9040453 (CityU1192/99E)]
5. Statistical Design Framework for Power Electronics Circuit Optimization - \$405,000 (Co-investigator) [9040429 (CityU1090/99E)]
6. A Fundamental Integrated Study of Power Electronics Controlled High-Intensity Discharge (HID) Lamp Systems - \$ 846,817 (Co-Investigator) [9040525 (CityU1156/00E)]
7. Research into Ballast Technologies for Fluorescent Lamps with Wide Dimming Range and Operating Temperature - \$568,404 (Principal Investigator) [9040724 [CityU 1233/02E]] [1 Dec 2002 – 30 Nov 2004]
8. Research on Efficient and Reliable AC-Module Technology and System Configurations for Small-Scale Modular-based Photovoltaic Systems - \$467,653 (Principal Investigator) [9040820 (CityU 1221/03E)] [1 Aug 2003 – 31 Jul 2005]
9. Research into an Efficient Dimming Technology for a Plurality of HID Lamps with Magnetic Ballasts - \$ 434,657 (Principal Investigator) [9040926 (CityU 1319/04E)] [1 Dec 2004 – 30 Nov 2006]

10. Research into a High-Fidelity Subwoofer Technology - \$510,704 (Principal Investigator) [9040999 (CityU 1129/05)] [1 Dec 2005 – 30 Nov 2008]
11. New Energy-Efficient High-Voltage DC/DC Power Conversion Technology - \$995,700 (Principal Investigator) [9041123 (CityU 112406)] [1 Dec 2006 – 30 Nov 2009]
12. A New Concept of Voltage Restoration Technology with Versatile Power Management - \$341,693 (Principal Investigator) [9041227 (CityU 112407)] [1 Dec 2007 – 30 Nov 2009]
13. A New Energy-Recyclable Burn-in Technology for Electronic Ballast Industry - \$776,938 (Principal Investigator) [9041341 (CityU 112708)] [1 Jan 2009 – 31 Dec 2011]
14. Research on a new grid-connected inverter technology for building-integrated microgrid – \$1,142,560 (Principal investigator) [9041662 (CityU 112711)] [1 Jan 2012 – 31 Dec 2014]
15. Exploring the Concept of Active DC Capacitor for Power Conditioning Systems - \$700,000 (Principal investigator) [9041763 (CityU 112512)] [1 Jan 2013 – 31 Dec 2015]
16. Research on a New Coupling Technology for Wireless Inductive Links - \$645,500 (Principal investigator) [9041879 (CityU 112613)] [1 Jan 2014 – 31 Dec 2016]
17. Development of A Co-Simulator for Smart Grid with Communication Network - \$609,976 (Co-investigator) [1 Sep 2013 – 31 Aug 2016]
18. Study of Architecture for High-Power Color-Tunable LED Lighting System - \$ 696,029 (Principal investigator) [9042188 (CityU 11205115)] [1 Jan 2016 - 31 Dec 2018]
19. AC/DC Converter Architecture for Vibration Energy Harvesting - \$735,000 (Principal Investigator) [9042643 (CityU 11205418)] [1 Nov 2018 – 31 Oct 2021]
20. Architecture for Grid-connected Inverters with Power Semiconductor Filters - \$707,144 (Principal Investigator) [9042827 (CityU 11206219)] [1 Jan 2020 – 31 Dec 2022]
21. Wideband Harmonic Voltage Compensator Technology for Enhancing the Stability of Multi-Paralleled Inverter Systems - \$845,055 (Principal Investigator) [CityU 11217320] [1 Jan 2021 – 31 Dec 2023]

### **Research Impact Fund**

1. Center for Wide-bandgap Semiconductor Power Electronics Research - \$700,000 (Co-investigator) [8799001 (R6008-18)] [1 Jun 2019 – 31 May 2023]

### **NSFC / RGC Joint Research Scheme**

1. Characterization and Control of a System with Multiple Offshore Power Inverters Connected in Parallel with Long Cables - \$1,149,266 (Principal Investigator) [9054018 (N\_CityU128/15)] [1 Jan 2016 – 31 Dec 2019]

### **Contract Research**

1. Research into LED lamp tubes / bulbs powered by ordinary electronic ballasts for discharge lamps - \$291,250 [CityU 9231009] (Principal Investigator) (Funded by Farbell Investment Limited) [Aug 1 2009 – Jan 31 2011]
2. An investigation into a new maximum power point tracking technology, \$315,840 [CityU 9231032] (Funded by Provista Technology Limited) (Principal Investigator) [Apr 1 2011 – 30 Sep 2013]

3. Investigation into the Lighting Control Technology for a Large-Scale Lighting Infrastructure, \$200,000 [CityU 9220056] (Funded by e.Energy Lighting Limited) (Principal Investigator) [Jan 17 2011 – Jan 15 2015]
4. Research into the phase-controlled dimmable electronic ballast technology, \$315,840 [CityU 9231038] (Funded by e.Energy Lighting Limited) (Principal Investigator) [1 Jun 2011 – 30 Jun 2013]
5. A DC System with Intelligent USB DC Power Supply Outlets for Mobile Gadgets, \$52,425 [CityU 9667093] (Funded by Timely Electronics Limited) (Co-investigator) [Mar 1 2015 – July 31 2015]
6. Forecasting Flexibility of a Smart Campus, \$1,200,000 [CityU 9231136] (Funded by ALSTOM) (Co-investigator) [1 Apr 2014 - 31 March 2017]
7. Apps for the Intelligent USB Power Supply Unit, \$41,358 [CityU 9231167] - eUSB (Funded by Premier Merchandises Limited) (Co-investigator) [1 Nov 2014 - 29 Mar 2017]
8. Double Pulse Testing System for Insulated Gate Bipolar Junction Transistors, \$80,828 [CityU 9211072] (Funded by ASTRI) (Principal Investigator) [Feb 1 2015 – May 31 2015]
9. High-frequency Household IH Cooker in Single-ended ZVS Resonant Topology, \$64,526 [CityU 9231170] (Funded by Infineon) (Principal Investigator) [1 Jan 2015 – 30 Apr 2015]
10. Design and Implementation of Battery Tester, \$660,000 [CityU 9231173] (Funded by Premier) (Co-investigator) [1 Jan 2015 – 8 Jun 2017]
11. Algorithm for the Intelligent USB Power Supply Unit, \$40,000 [CityU 9231213] (Funded by Marvel Digital) (Co-investigator) [Dec 1 2015 – Nov 30 2016]
12. Development of an AC/DC Converter with Power Semiconductor Filtering Technology, \$339,536 [CityU 9231293] (Funded by AnApp Technologies Limited) (Principal Investigator) [Apr 12, 2018 - Dec 31, 2018]
13. Pilot Study on IoT Application on Monitoring Solar-driven LED Lampposts, \$620,000 [CityU 9211146] (Funded by Electrical and Mechanical Services Department) (Co-investigator) [Mar 2018 – Sep 2018]
14. 電池智能診斷系統技術研究, \$250,000 [CityU 9231316] (Funded by Foton Car Manufacturer)[Nov 6, 2018 – 05/11/2019]
15. Firmware Design for the Bridgeless Totem-pole Circuitry, \$800,000 [CityU 9211235] (Funded by ASTRI) (Principal Investigator) [Aug 24 2020 – Feb 23 2021]
16. Development of Diagnosis Algorithm and Firmware Development for Capacitor Online Monitoring, \$800,000 [CityU 9211237] (Funded by ASTRI) (Principal Investigator) [Nov 26 2020 – Dec 31 2021]

### **CityU Grants**

#### *A. Small-Scale Research Grant*

1. Design of Power Electronic Regulators for Large Signal Stability - \$45,000 (Principal Investigator) [9030380]

#### *B. Direct Allocation Grant*

1. Development of a low-profile maximum power point tracker for photovoltaic arrays - \$100,000 (Principal Investigator) [7100152]

#### *C. Strategic Research Grants*

1. Development of Switched-Capacitor-Based DC/DC Converters - \$311,450 (Principal Investigator) [7000493]

2. Modeling, Analysis, and Design of Globally and Locally Stable Power Electronic Regulators - \$301,544 (Principal Investigator) [7000586]
3. Design and Implementation of Digital Power Amplifier for Digital Audio System - \$257,620 (Co-investigator) [7000526]
4. Development of a Unified Modeling Technique for Analysis and Design of Switching Power Regulators - \$ 200,000 (Principal Investigator) [7000808]
5. Development of an Integrated and Efficient Approach for Statistical Design of Power Electronics Systems - \$390,000 (Principal Investigator) [7000860]
6. An investigation into a novel voltage sensorless control scheme for power electronic converters – \$ 250,000 (Principal Investigator) [7001135]
7. Investigation into a low-profile integrated power conditioning technology for distributed grid-connected photovoltaic systems - \$225,040 (Principal Investigator) [7001211]
8. High-Efficient Energy-Processing Soft-Switching Three-Level Converter - \$179,120 (Principal Investigator) [7001595]
9. A New Control Theory for Switched-Capacitor Converters - \$166,148 (Principal Investigator) [7002460]
10. Power Semiconductor Filter - A New Concept of Filtering Technology for Power Electronic Systems - \$100,000 (Principal Investigator) [7004231] [Sep 1 2014 – Nov 30 2015]
11. Bidirectional AC/DC Conversion Technology for Hybrid AC-DC Microgrid - \$100,000 (Principal Investigator) [7004621] [Sep 1 2016 – Aug 31 2018]
12. Online Parameter Estimation Module for Electrochemical Batteries - \$100,000 (Principal Investigator) [7004841] [Sep 1 2017 – Aug 31 2019]

*C. Teaching Development Grants*

- [1] A Virtual Learning Support Centre for Student - \$754,440 (Co-Investigator) [TDG0038]
- [2] Enhancing University Students' Learning Motivation. Phase 1: Helping Students Develop Their Own Learning Motivation - \$350,220 (Co-investigator) [6000124]
- [3] Designing a Problem-based-Learning Environment for Teaching Power Electronics Course - \$78,000 (Principal Investigator) [6980040]
- [4] PBL Model in Designing an EE Signature GE Course - \$150,000 (Principal investigator) [6989035] [Sep 1 2018 – Aug 31 2020]

*D. Innovation to Realization Funding (I2RF) and Applied Research Grants*

1. LED replacement lamp driver with universal compatibility - \$391,214 (Principal Investigator) [CityU 6351012] [Jun 1 2011 – Sep 28 2012]
2. Development of a Smart USB Hub - \$199,800 (Co-investigator) [ARG 9667132] [May 1 2016 – April 30, 2018]

*E. CityU Seed Grant*

1. The Design and Development of a Mood Sensing and Inducing Arduino Prototype for Promoting Employees' Positive Mood and Work Performance - \$82,658 (Co-investigator) [CityU 7003005]

*F. Donation*

1. Feasibility Study of Wireless Sensor Network - \$500,000 (Co-investigator)

**NSFC projects**

- [1] 运用自适应蚁群算法设计和优化功率电子电路的研究 – \$260000 (Co-PI) 60573066

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- [2] Chun Sing Cheng, Wing Hong Lau, and Shu-Hung Henry CHUNG, Efficient Battery Tester, US 10,866,285 B2, Dec 15, 2020.
- [3] Shu Hung Henry Chung, Chun For Liu, Wing Hong Lau, Method of Diagnosing An Electrical Energy Storage Apparatus, An Electronic Device for Use in An Electrical Energy Storage Apparatus And An Electrical Energy Storage Apparatus, US 10,838,012, Nov 17, 2020.
- [4] Shu Hung Henry Chung and Ruihong Zhang, An Electrical Load Driving Apparatus, China Patent, ZL201410085846.X, Oct 9, 2020.
- [5] Shu Hung Henry Chung, Chun Sing Cheng, and Wing Hong Lau, Method and an apparatus for use in an electric circuit, US 10,761,123, Sep 1, 2020.
- [6] Ngai Man Ho, Radwa Abdalaal, and Henry Shu Hung Chung, Transformerless Single-Phase Unified Power Quality Conditioner (UPQC) for Large Scale LED Lighting Networks, US Patent 10,728,981 B2, July 28, 2020.
- [7] Yuanbin He, Shu Hung Henry Chung, Chun Tak Lai, Electric Circuit and Associated Method for Regulating Power Transfer in a Power Grid, US Patent 10,720,773 B2, Jul 21, 2020.
- [8] Kewei Wang and Shu-hung Henry CHUNG, Circuit Arrangement for Filtering an Electric Current, US Patent 10,678,281 B2, June 9, 2020.
- [9] Ka Wai Ho, Chung Pui Tung, Po Wa Chow, Wing To Fan, Wan Tim Chan, Shu Hung Chung, Chiu Sing Tse, Current control circuit, US Patent 10,637,358 B2, Apr 28, 2020.
- [10] Shu Hung Henry Chung, Chung Pui Tung, Wing To Fan, Po Wa Chow, Sui Pung Cheung, Electric Circuit Arrangement and a Method for Generating Electric Current Pulses to Load, *US Patent 10,594,318 B2*, Mar 17, 2020.
- [11] Shu-Hung Henry CHUNG, Huai WANG, DC link Module for Reducing DC Link Capacitance, US Patent 10,505,466 B2, Dec 10, 2019.
- [12] Shu-Hung Henry CHUNG and Ruihong ZHANG, LED 照明電路, ZL201610015182.9, Aug 27, 2019.
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- [14] Chun Sing CHENG, Wing Hong LAU, Shu Hung CHUNG, Efficient Battery Tester, US Patent 10,295,611 B2, May 21, 2019.
- [15] Shu Hung Henry CHUNG, Wing To FAN, and Kuen Faat YUEN, 一種用於電力電子系統上的輸入濾波器, ZL201510007594.3, May 17, 2019.
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- [17] Shu Hung Henry CHUNG and Kuen Faat YUEN, Power Circuit and its Operation Method for Regulating Power Transfer, US Patent 10,289,139, May 14, 2019.
- [18] Shu Hung CHUNG and Kewei WANG, Circuit Arrangement for Use in a Power Conversion Stage and a Method of Controlling a Power Conversion Stage, US Patent 10,284,112 B2, May 7, 2019.
- [19] 鍾樹鴻 ; 張瑞蓬 · 功率流控制裝置 · Chinese Patent ZL 2014 1 0092906.0, April 19, 2019
- [20] Shu Hung Henry CHUNG, Shun Cheung Yeung, and Walter Marin, Method and Apparatus for Regulating an Electrical Power Source Based on Global and Local Maximum Load Power, US Patent 10,256,743 B2, Apr 9, 2019.
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- [22] Shu Hung Henry CHUNG and Hiu Kwan TSE, Method for Regulating an Electrical Power Circuit and an Electrical Power Regulating Apparatus, US Patent 10,236,688, Mar 19 2019.
- [23] Shu Hung CHUNG and Nan CHEN, System and Method for Estimating Component Parameters, US Patent 10,197,607 B2, Feb 5, 2019.
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- [25] Shu Hung Henry CHUNG, Kuen Faat YUEN, and Wing To FAN, Power Factor Correction Circuit for a Power Electronic System, US 10,177,646 B2, Jan 8, 2019.
- [26] Nan CHEN and Shi Hung Henry CHUNG, System and Method for Emulating a Gas Discharge Lamp, US Patent 10,159,122 B2, Dec 18, 2018.
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- [39] Shu Hung Henry CHUNG, Current Distribution Apparatus, US Patent, *US 9,450,404*, Sep 20, 2016.
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- [80] Shu-yuen Ron HUI and Shu-hung Henry CHUNG, “Voltage sensorless control of power converters’, US patent 6,297,621, Oct 2 2001.

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- [2] HE Yuanbin, Shu Hung Henry CHUNG, and Chun Tak LAI, Electric Circuit and Associated Method for Regulating Power Transfer in a Power Grid, US 15/859,888 Jan 2, 2018.
- [3] Shu Hung Henry CHUNG, Chun For LIU, and Wing Hon LAU, A Method of Diagnosing an Electrical Energy Storage Apparatus, and Electronic Device for use in an Electrical Energy Storage Apparatus as an Electrical Energy Storage Apparatus, US 62/475,350, Mar 23, 2017.
- [4] Shu Hung Henry CHUNG, Chung Fai TSE, Yau Chung John CHAN, Shun Cheung YEUNG, and Chun Tak Jacky LAI, A Temperature Regulation System and a Power Regulation Apparatus, PCT/CN2017/072857, Feb 3, 2017.

- [5] Shu Hung Henry CHUNG, Chung Fai TSE, Yau Chung John CHAN, Shun Cheung YEUNG, and Chun Tak Jacky LAI, A Thermostat Apparatus and a Temperature Regulation System, PCT/CN2016/106746, Nov 22, 2016.
- [6] Shu Hung Henry CHUNG, Chung Fai TSE, Yau Chung John CHAN, Shun Cheung YEUNG, and Chun Tak Jacky LAI, A Thermostat Apparatus and a Temperature Regulation System, PCT/CN2016/104931, Nov 7, 2016.
- [7] Shu Hung Henry CHUNG, Chun Sing CHENG, Wing Hon LAU, A Method and an Apparatus for use in an electric circuit, PCT/CN2016/103954, Oct 31, 2016.
- [8] Shu Hung Henry CHUNG and Hiu Kwan TSE, A Method for Regulating an Electrical Power Circuit and an Electrical Power Regulating Apparatus, US application no. 15/275,772, September 26, 2016.
- [9] Kewei WANG and Shu Hung Henry CHUNG, Circuit Arrangement for Filtering an Electric Current, China Patent Application 20160792728.1, August 31, 2016.
- [10] Kewei WANG and Shu Hung Henry CHUNG, Circuit Arrangement for Filtering an Electric Current, US Patent Application 15/045,607, 17 Feb 2016.
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- [12] Shu Hung Henry CHUNG and Kuen Faat YUEN, Electric Filter for a Motor System, PCT Application PCT/CN2015/078472, 7 May 2015.
- [13] Shu Hung Henry CHUNG, Kuen Faat YUEN, and Wing To FAN, 電流控制裝置, Chinese Patent, 201410591643.8, Oct 29, 2014.
- [14] Shu Hung Henry CHUNG, Shun Cheung YEUNG, and Walter MARIN, 一種用于調節電源的方法, Chinese Patent, 201410521279.8, Sep 30, 2014.
- [15] Shu Hung Henry CHUNG and Jianjing WANG, 用于固態電子設備的信號調制接口, Chinese Patent 201410469018.6, Sep 15, 2014.
- [16] Shu Hung Henry CHUNG, Kuen Faat YUEN, and Wing To FAN, "A Power Factor Correction Circuit for a Power Electronic System," US Patent Application No. 14/304,339, Jun 13, 2014.
- [17] Shu Hung Henry CHUNG, Nan CHEN, Po Wa CHOW, and Lai Hang CHAN, Apparatus for transferring Electromagnetic Energy, International Patent Application PCT/CN2014/079589, Jun 10, 2014.
- [18] Shu Hung Henry CHUNG and Kuen Faat YUEN, An Electric Filter for a Motor System, HK Short Term Patent Application No. 14105142.0, May 30, 2014.
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- [20] Chung Fai Norman, Shu Hung Henry CHUNG, and Yau Chung John CHAN, USB Power Supply, International Patent Application No. PCT/CN2014/075277, Apr 14, 2014.
- [21] Shu Hung Henry CHUNG, Sui Pung CHEUNG, and Adam TO, 功率流控制裝置, China Patent Application No. 201410092906.0, Mar 13, 2014.
- [22] Shu Hung Henry CHUNG, Adam TO, and Rui hong ZHANG, Electrical Load Driving Apparatus, International Patent Application No. PCT/CN2014/073185, Mar 11, 2014.

- [23] Shu Hung Henry CHUNG and Rui hong ZHANG, 電力負載驅動裝置, China Patent Application No. 201410085846.X, Mar 10, 2014.
- [24] Shu Hung Henry CHUNG, Sui Pung CHEUNG, Tsz Kit LAU, Hoi Ling WONG, Sin Yu YEUNG, and Hoi Sing SIU, Light Sensor, US Patent Application No. 29/483,046, Feb 25, 2014.
- [25] Shu Hung Henry CHUNG, 電流分布裝置, China Patent Application no. 201410061805.7, Feb 24, 2014.
- [26] Shu Hung Henry CHUNG and Huai WANG, A DC Link Module for Reducing DC Link Capacitance, US Patent Application 14/131,259, Jan 7, 2014.
- [27] Chung Fai Norman, Shu Hung Henry CHUNG, and Yau Chung John CHAN, USB 電源, China Patent Application No. 201310538205.0, Nov 4, 2013.
- [28] Shu Hung Henry CHUNG, Walter MARIN, and Shun Cheung YEUNG, A Method for Regulating an Electrical Power Source, US Patent Application No. 14/045,124, Oct 3, 2013.
- [29] Shu Hung Henry CHUNG, Sui Pung CHEUNG, Tsz Kit LAU, Hoi Ling WONG, Sin Yu YEUNG, and Hoi Sing SIU, Light Sensor, Hong Kong Patent Application No. 1301446.1, Aug 26, 2013.
- [30] Chung Fai Norman, Shu Hung Henry CHUNG, and Yau Chung John CHAN, USB Power Supply, US Patent Application No. 13/952,824, Jul 29, 2013.
- [31] Shu Hung Henry CHUNG, Nan CHEN, Po Wa CHOW, and Lai Hang CHAN, Apparatus for transferring Electromagnetic Energy, US Patent Application No. 13/932,253, Jul 1, 2013.
- [32] Shu Hung Henry CHUNG, Adam TO, and Rui hong ZHANG, TRIAC-dimmable LED Lamp Driver, US Patent Application No. 13/836,648, Mar 15, 2013.
- [33] Shu Hung Henry CHUNG and Nan CHEN, "Apparatus or Circuit For Driving A DC Powered Lighting Equipment," US patent Application No.13/505,483, Jul 20, 2012.
- [34] Shu Hung Henry CHUNG and Huai WANG, DC Link Module for Reducing DC Link Capacitance, International Patent Application PCT/CN2012/078155 Jul 4, 2012.
- [35] Shu Hung Henry CHUNG and Nan CHEN, "System and Method for Estimating Component Parameters," US patent Application No.13/532,900, Jun 26, 2012.
- [36] Shu Hung Henry CHUNG and Nan CHEN, "System and Method for Emulating a Gas Discharge Lamp," US patent Application No.13/530,544, Jun 22, 2012.
- [37] Shu Hung Henry CHUNG and Nan CHEN, Driving Circuit for Powering a DC Lamp in a Non-DC Lamp Fitting, International Patent Application PCT/CN2012/076375, Jun 1, 2012.
- [38] Shu Hung Henry CHUNG and Huai WANG, A DC Link Module for Reducing DC Link Capacitance, International Patent Application PCT/CN2011/076955, Jul 4, 2011.
- [39] Wing-choi HO, Chi-kwan LEE, Shu-yuen HUI, and Shu-hung Henry CHUNG, "Electronic control method for a planar inductive battery charging apparatus," Chinese Patent Filing No. 200880124296.0, Jul 8, 2010.
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## Services to Hong Kong Government, Professional Bodies, and Industry

### A. Hong Kong Government

- 2019 **Member**, High-level Advisory Panel of Chief Executive’s Award for Teaching Excellence
- 2012, 2017 **Assessor**, Assessment Panel on Technology Education Key Learning Area, Chief Executive’s Award for Teaching Excellence (2012/2013 and 2017/2018)
- 2012 – Present **External Examiner** of the HKDSE Applied Learning - Course Cluster of Services Engineering, HK Examinations and Assessment Authority
- 2012 – 2018 **Member** of Disciplinary Tribunal Panel of EMSD
- 2010 – 2016 **Member** of the Public Examination Board, HKEAA
- 2009 - 2015 **Member** of Curriculum Development Council Committee on Technology Education
- 2006 - 2011 **Member** of the Engineering Panel of the Hong Kong Research Grants Council
- 1996 - 2012 **Chairman** of the AS-level electronics subject committee in the Hong Kong Examination Authority
- 1996 - 2012 **Chief Examiner** of 1999 HKASL Electronics
- 1996 - 2003 **Panel member** of the Disciplinary Tribunal Panel under the Electricity Ordinance
- 1996 - 2012 **Examination Question Setter** of the questions for the following public examinations:  
(a) HKAL - Engineering Science  
(b) HKASL - Electronics (Sample questions)  
(c) HKCEE - Engineering Science  
(d) HKCEE - Electricity and Electronics

### B. Professional Bodies

- 2021-present Member, Accreditation Board, The Hong Kong Institute of Engineers
- 2021-present **Panel Member**, ITF Research Projects Assessment Panel
- 2020 – present **Expert panel Member**, Hong Kong Science and Technology Park
- 2020-present **Chairman**, Working Party on Accreditation of System Certification Bodies under Accreditation Advisory Board, Innovation and Technology Commission
- 2017-present **Member**, LSCM’s Expert Review Panel (ERP) from Jan 2017 to Dec 2022.
- 2019-present **Council Member**, ASTRI University Advisory Council
- 2020 **Invited speaker**, “智能建築促進能源效益”, SmartHK 2020, Nov 25, 2020.
- 2020-present **Board Member**, Representative of IEEE Power Electronics Society, IEEE Internet of Things (IoT) Activity Board

- 2019 **Invited speaker**, Tutorial on “Battery Modeling and Diagnostics” IFEC, Nov 24-26, 2019
- 2019 **Industry advisor**, Investment Committee of the Corporate Venture Fund of the Hong Kong Science and Technology Parks Corporation
- 2018-2020 **Chair**, Technical Program Committee, IEEE Energy Conversion Congress and Exhibition, 2020.
- 2018-2019 **Vice-Chair**, Technical Program Committee, IEEE Energy Conversion Congress and Exhibition, 2019.
- 2018 **Topic Chair**, Technical Program Committee, 10<sup>th</sup> International Conference on Power Electronics (ICPE 2019) – ECCE-Asia 2019.
- 2018 **Keynote speaker**, How 3<sup>rd</sup> Generation Semiconductor enables Smarter Devices with AI,” ASTRI Technovation Summit 2018, Dec 14, 2018.
- 2018 **Plenary speaker**, Roles and responsibilities of Technology Education in the promotion of STEM Education, Showcase of the Chief Executive's Award for Teaching Excellence, Education Bureau, 24 Nov 2018.
- 2018 **Invited speaker**, “Smarter Building: Smart Thermostats for Building Air Conditioning”, EMSD Symposium, Nov 15-16, 2018.
- 2018 - 2020 **Chairman**, Electrical and Electronic Products, Accreditation Advisory Board, Hong Kong Accreditation Service (HKAS), Nov 2018 – Oct 30 2020.
- 2018 **Invited speaker**, Power Semiconductor Filtering Technology, LG Electronics Seminar, Korea, July 6, 2018.
- 2018 **Plenary speaker**, Smart Power Electronics for the Smart Grids, Power Electronics Annual Conference, Hoengseong-gun, Gangwon-do, Korea, July 3 – 5, 2018.
- 2018 **Invited speaker**, Optimized Hybrid PWM Scheme for Mitigating Zero-Crossing Distortion in Totem-pole Bridgeless PFC, Seoul National University of Science and Technology, Korea, July 1, 2018.
- 2018 **Invited speaker**, Application of a Problem-Based-Learning Model in Designing Electronic Engineering Curriculum, Unlocking Innovative Learning: Discovering New Teaching Approaches in Higher Education, HKUST, May 11, 2018.
- 2018 **Invited speaker**, An Energy-Efficient Battery Parameter Extraction Technique, South China University of Science and Technology and Guangdong University of Technology, Jan 16-17, 2018.
- 2018 **Invited speaker**, Advances in Battery Technology, Emerging Technologies Forum, CityU, Jan 5, 2018.
- 2017 **Invited speaker**, Industry and University Collaboration Forum 2017, HK Science Park, Nov 14, 2017.
- 2017 **Co-General Chair**, IEEE 11th Annual Asia-Pacific Power and Energy Engineering conference (IEEE PES APPEEC 2019)
- 2017 **Invited speaker**, Connecting the Dots for Re-industrialization – The Greater Bay Area Landscape, Oct 17, 2017.
- 2017 **Invited speaker**, Smart Power Electronics for the Smart Grid, Hangzhou Danzi, July 8, 2017.



- 2017 **Invited speaker**, Smart Power Electronics for the Smart Grid, University of Bristol, May 30, 2017.
- 2017 **Invited speaker**, Smart Power Electronics for the Smart Grid, workshop on emerging devices, circuits and systems, Shanghai, July 7, 2017.
- 2017 **Guest speaker**, “CIBSE Hong Kong Branch Annual General Meeting (AGM)” on March 7, 2017. The topic is “Smart Battery Diagnostic System”
- 2017 **Member**, International Steering Committee of Asian Conference on Energy, Power and Transportation Electrification (ACEPT 2017)
- 2017 **Evaluator**, IEEE Industrial Electronics Society Fellow Evaluating Committee
- 2017 **Assessor**, Shanghai Jiao Tong University. Electronic, Information and Electrical Engineering
- 2017 **Reviewer**, Canada Research Chair in Intelligent Energy Systems
- 2017 **Member**, Community Rehabilitation Service Support Centre Advisory Group, Hospital Authority
- 2017-present **Member**, Engineering Panel, Research Grants Council
- 2017 **Panelist**, ASTRI Technology Review Panel
- 2016 **Technical Advisor**, Hong Kong Certification Centre
- 2016 **Keynote Speaker**, “High-level Architecture for Co-simulation of Power Grids, Information Systems and Communication Networks, International Conference on Signal Processing, Communications, and Computing, Aug 6, 2016.
- 2016 **Invited Speaker**, “Smart Power Electronics for Smart Grids”, International Future Energy Challenge Workshop, July 20, 2016.
- 2016 **Invited Speaker**, “Smart Grid”, 2016 工程與可持續城市發展學術研討會, NSFC-HKUST, June 20-24, 2016.
- 2016 **Invited Speaker**, “Seminar on Smart Power Electronics”, Shanghai Maritime University, May 18, 2016.
- 2015 **Invited Speaker**, “Smart Power Electronics for the Smart Grid” International Workshop CNRS-ALSTOM « From Industry 4.0 to Smart cities », Paris, France, Nov 26-27, 2015.
- 2015 **Invited Speaker**, “From Energy Generation and Conversion to System Prognostics in Microgrid,” IEEE Macau, Macau on October 23, 2015.
- 2015 **Invited Speaker**, “Smart and Sustainable Campus,” The 14th Annual Power Symposium 2015 – A Global Pursuit For Zero Carbon Building: Challenges and Solutions – The Hong Kong Story, Organized by the Power and Energy Section of the IET Hong Kong, Kowloon Shangri-La Hotel, June 26, 2015.
- 2014 **Organizer**, Symposium on Advanced Power Electronics and Its Application, Hong Kong Science and Technology Park, 5 September 2014.
- 2014-present **Editor-in-chief**, IEEE Power Electronics Letters
- 2014-2016 **Guest Editor**, “Special Issue on Power Electronics for Biomedical Applications,” IEEE Journal of Emerging and Selected Topics in Power Electronics

- 2014-2016 **Guest Associate Editor**, “Special Issue on LED Drivers,” IEEE Journal of Emerging and Selected Topics in Power Electronics
- 2013-2015 **Guest Associate Editor**, “Special Issue on Robust Design and Reliability in Power Electronics,” IEEE Transactions on Power Electronics, August 2015.
- 2013-present **Associate Editor**, IEEE Journal of Emerging and Selected Topics in Power Electronics
- 2004-present **Associate Editor**, IEEE Transactions on Power Electronics
- 2011 **Member** of the peer review panel of the Danish Council for Strategic Research
- 2011-2014 **Associate Editor**, IEEE Transactions on Circuits and Systems – Part I
- 2013 **Assessor** of research projects, Italian Ministry of Education, University and Research (MIUR) General Directorate for the coordination and development of Research, 2012-2013
- 2013 **Assessor**, Research proposal of The Pazi Foundation is a joint foundation established by the Israeli University Planning and Budgeting Committee (UPBC) and the Israeli Atomic Energy Commission (IAEC).
- 2013 **Guest speaker**, IEEE International Future Energy Electronics Conference (IFEEC), Tainan, Taiwan on November 03-06, 2013.
- 2013 **Guest speaker**, Taiwan Power Electronics Conference 2013, Tainan, Taiwan, Nov 2, 2013.
- 2013 **Organizer**, Symposium on High-Performance and Emerging Technologies: Green Power Electronics and 3D Packaging, Hong Kong Science and Technology Parks, August 30, 2013.
- 2013 **Invited speaker**, Daisy-Chain Transformer Structure and its applications, Aalborg University, Denmark, July 9, 2013.
- 2012 **Technical Co-chair**, IEEE International Future Energy Electronics Conference (IFEEC), Tainan, Taiwan on November 03-06, 2013.
- 2012 **Member**, Review Committee of the 2013 IEEE International Symposium on Circuits and Systems, May 19-23, Beijing, China.
- 2012 **Guest speaker**, World of Solar Conference 2012, Electronic Asia, Oct 15, 2012.
- 2012 **Guest Editor**, Special Issue on ISCAS 2012, *IEEE Transactions on Circuits and Systems, Part I*.
- 2012 **Track Chair** of the IEEE Asia Pacific Conference on Circuits and Systems, Dec 2-5, The Splendor Hotel, Kaohsiung, Taiwan, 2012.
- 2012 **Member**, Product Certification scheme for LED Bulkhead Lighting, Hong Kong Electronic Industries Association.
- 2012 **Chair of a special session**, 9th IET International Conference on Advances in Power System Control, Operation and Management, APSCOM 2012, Nov 18-21, 2012.
- 2012 **Member**, Technical Program Committee of 2012 IEEE SmartGridComm, Nov 5-8, 2012, Tainan City, Taiwan.

- 2012 **Vice-Chairman**, Technical Committee, Energy Conversion Congress and Exposition (ECCE), Sept. 15-20, 2012, Raleigh, NC, USA, 2012
- 2011 **Member**, Task Force on Engineering Development in secondary School, Hong Kong Institution of Engineers, 2011
- 2011 **Member** of Incu-Tech Programme – Admission Panel, Hong Kong Science and Technology Parks Corporation
- 2011 **Advisor** of the Force Working Group on Environmental Conservation, Hong Kong Police Force
- 2011 **Invited speaker** of Power Electronics Workshop organized by the National Cheng Kung University, Tainan, Taiwan, Dec. 14, 2011.
- 2011 **Invited speaker** of the Computational Intelligence Summer School, organized by the Sun-Yat-Sen University, Guangzhou, China, Aug 25, 2011.
- 2011 **Invited speaker** of the Emerging Technologies Forum – Advanced technologies in Energy Harvesting, CityU, May 27, 2011
- 2011 **Chairman** of the IEEE Workshop on Solid-State Lighting, Science Park, April 15, 2011.
- 2011 **Member** of IEEE Senior Member Review Panel
- 2011 **Chairman** of the Technical Committee on High Performance and Low Cost Applications, IEEE Power Electronics Society
- 2011 **Invited speaker** for China Sourcing Fair: Electronics & Components (Hong Kong) 2011 conference program (April 14 2011)
- 2011 **External examiner** for an MPhil Examination at HK PolyU (Feb 2011)
- 2011 **Invited speaker** for the Winter School on Computer Intelligence 2011, Sun-Yat-Sen University, Guangzhou, Jan 24-28, 2011.
- 2010 **Invited speaker** at the HKIS 18th Annual Conference 2010 (Nov 2010)
- 2010 **Invited speaker** at the NWS Holdings Environmental Seminar 2010 organized by NWS Holding Limited (Sep 2010)
- 2010 **Invited speaker** at the "20th Anniversary Celebration Kick-off Ceremony cum Symposium on Building a Green City" organized by the Hong Kong Association of Property Management Companies
- 2010 **Member** of the Technical Program Committee of the International Conference on Green Circuits and Systems in Shanghai, 21-23 June 2010
- 2010-2012 **Associate Editor** of IEEE Transactions on Circuits and Systems, Part II
- 2009 **Member** of the Editorial Board of the *Advances in Power Electronics*
- 2009 **Track chair**, 8th International Conference on Power Electronics and Drive Systems 2009.
- 2008-2010 **Associate Editor** of IEEE Transactions on Circuits and Systems, Part I
- 2008 **Member** of the Editorial Board of the *Research Letters in Electronics*.

- 2007 **Vice-Chair** of the Technical Committee of the Power Electronics Specialists Conference  
2008
- 2006 **Members** of the Expert Panel, Automotive Parts and Accessory Systems R&D Centre
- 2006 **Organizing committee member** of 2<sup>nd</sup> Workshop on Industrial Applications
- 2003-Present **Member** of the International Program Committee for EuroPES  
**Member** of the International Program Committee for AsiaPES
- 2001- Present **External examiner** for Chu Hai College
- 2006 **Track Chair** of 2006 IEEE Asia Pacific Conference on Circuits and Systems
- 2001-2003 **Guest Editor** of the special issue on Analysis, Design and Applications of Switching Circuits and Systems, IEEE Transactions on Circuits and Systems, Part I.
- 1999-2003 **Associate Editor** of IEEE Transactions on Circuits and Systems, Part I.
- 2000 **Technical Program Chairman** of the 3rd Hong Kong IEEE Switched-Mode Power Supplies
- 1999-2000 **Technical Committee Member** of the IEEE International Symposium on Circuits and Systems, Geneva, Switzerland, 2000
- 1998 **Organizing Committee Member** of the IEEE 3<sup>rd</sup> International Conference on Power Electronics and Drives
- 1998 **Invited speaker** for the Symposium on Hong Kong Electronic Technology Development Strategy.
- 1998-2000 **Secretary** of the Technical Committee on Power Systems and Power Electronic Circuits of IEEE Circuits and Systems Society, U.S.A.
- 1998 **Committee member** of the Conference on Applications of Automation Science and Technology, Nov., Hong Kong.
- 1998 **Panel Member** of the IEEE Region 10 Student Branch Website Contest
- 1998 **Technical Committee Member** of the IEEE 3rd International Conference on Power Electronics and Drives
- 1998 **Committee member** of IEEE Hong Kong Joint Chapter on Circuits and Systems and Communications
- 1998 - 2003 **IEEE Student Branch Counselor**
- 1997 **Chairman** of the Technical Committee on Power Systems and Power Electronic Circuits of IEEE Circuits and Systems Society, U.S.A.
- 1997 - 1999 **Chairman** of the Council of the Sir Edward Youde Scholar's Association
- 1996 - 1997 **Publications Chairman** of the 1997 IEEE International Symposium on Circuits and Systems, Hong Kong
- 1995 - Present **Reviewers** of the following book, journals, conferences, contest
- (a) Applied Power Electronics Conference
  - (b) Power Electronic Circuit Review
  - (c) IEEE Transactions on Circuits and Systems, Part I
  - (d) IEEE Transactions on Power Electronics
  - (e) IEEE Transactions on Industrial Electronics

- (f) Automatica
- (g) Journal of Electrical and Electronics Engineering, Australia
- (h) Electric Power Systems Research Journal
- (i) IEEE Student Paper Contest
- (j) IEEE International Symposium on Circuits and Systems
- (k) IEE Student Paper Contest

- 1995 - Present **Session Chairman** of the following conferences:
- (a) IEEE International Symposium on Circuits and Systems
  - (b) 23rd Annual Conference of the IEEE Industrial Electronics Society, 1997
  - (c) IEEE International Symposium on Circuits and Systems
  - (d) IEEE International Symposium on Circuits and Systems
  - (e) 2nd International Conference on Personal, Mobile and Spread Spectrum Communications
  - (f) European Conference on Circuit Theory and Design
- 1995 **Organizing Committee Member** of the 2nd International Conference on Personal, Mobile and Spread Spectrum Communications
- 1995 **Visiting Lecturer** of the module "Power Electronics and Drives" for the Department of Electrical Engineering, The Hong Kong Polytechnic University.
- 1995 **Committee Member** of the 2nd International Conference on Mechatronics and Machine Vision in Practice
- 1995 **Honorary speaker** of the "Hitachi Frequency Inverter Seminar"
- 1995 **Invited speaker** of the 2nd Hong Kong IEEE Workshop on Switched-mode Power Supplies
- 1994 - 1997 **Vice-Chairman** of the Council of The Sir Edward Youde Scholar's Association
- 1994 **Secretary** of the 1994 IEEE Symposium on Power Electronics Circuits
- 1992 – 1994 **Executive Committee Member** of the Sir Edward Youde Scholar's Association
- 1991 - 1992 **Chairman** of The Executive Committee of The Sir Edward Youde Scholar's Association