YEN-SHIN LAI

Chair Professor, Fellow IEEE
Founder, Center for Power Electronics Technology
Founder, Power Electronics Group, EE Depart,
National Taipei University of Technology
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Education:

Ph. D. 1995 Dept. of Electrical and Electronic Eng., Bristol University, England, UK
MS 1987 Dept. of Electronic Eng., NTUST, Taipei, Taiwan

Innovation:

First proposal of *sub-optimal two-phase/three-phase PWM* for inverter-controlled motor drives
First proposal of *random PWM technique* with *constant sampling frequency* for *closed-loop* motor drives
First proposal of *optimal PWM technique common-mode voltage reduction* of inverter-controlled motor drives
First proposal of initial position detection technique of BLDC motor drives *without* requiring current sensor
First proposal of *tri-nary* multilevel inverter/converter to give the maximum output level for the same stages
First proposal of *virtual-stage PWM* for multilevel inverter
First proposal of *conduction loss reduction* PWM technique for BLDC motor drives
First proposal of *wide speed range* control technique for *sensor-less* BLDC motor drives
First proposal of field weakening control technique for AC motor drives to achieve *hexagonal trajectory*
First proposal of *on-line* parameter tuning technique for predictive digital power converter
First proposal of *two-dimensional* random PWM technique with *constant* sampling frequency for converter

Employment and Research Experience:

2025 – 2028 Independent Director, Chicony Power Technology, Co. Ltd.
2025 – 2028 Chair Professor, National Taipei University of Technology, Taiwan
2024 – 2027 Independent Director, Good Will Instrument Co., Ltd.
2024 – 2026 Independent Director, Allis Electric, Co., Ltd.
2016 – 2019 President, Taiwan Power Electronics Association
2016– 2018 Chair, Electrical Power Engineering Division, Ministry of Science and Technology, Taiwan

2016 –	Lifetime Distinguished Professor, National Taipei University of Technology, Taiwan
2016 – 2025	Chair Professor, National Taipei University of Technology, Taiwan
2013 – 2016	Chair/Distinguished Professor, National Taipei University of Technology, Taiwan
2013 – 2014	Distinguished Researcher, Industry Technology Research Institute, Hsin-Chiu, Taiwan
2011 – 2011	Visiting Professor, Virginia Tech., USA
2006 – 2012	Distinguished Professor, National Taipei University of Technology, Taiwan
1999 – Present	Professor, National Taipei University of Technology, Taiwan
2003 – 2006	Chairman, Department of Electrical Engineering, National Taipei University of Technology, Taiwan
1996 – 1999	Associate Professor, National Taipei University of Technology, Taiwan
1987 – 1996	Lecturer, National Taipei University of Technology, Taiwan
1984 – 1985	Engineer, BES Engineering Cooperation, Taipei, Taiwan
1982 – 1984	Second Lieutenant, Air Force, Taiwan.

Professional Society Activities:

2025	International Steering Committee, IEEE IFEEC, Barli, 2025
2023	International Steering Committee, IEEE IFEEC, Sydney, 2023
2022	Member, IES Publications Committee, Distinguished Lecturer Program Committee
2022	Member, IES Chapter & Joint Chapter Program Committee
2020 – 2022	Committee Member, IEEE Nikola *Tesla Award Committee*
2020 – 2023	Co-Editor-in-Chief, IEEE Trans. on Industrial Electronics
2020 – 2022	AdCom member (elected), IEEE Industrial Electronics Society
2019 – 2024	Editor, IEEE Journal of Emerging and Selected Topics in Power Electronics (IEEE JESTPE)
2019	General Co-Chairs, IEEE IFEEC, Singapore, 2019
2019	International Steering Committee, ECCE Asia, Korea, 2019
2018	IEEE PEAC Technical Program Co-Chairs, China, 2018
2018	ACEPT International Steering Committee, Singapore, 2018
2018	Vice-Co Chairs, Steering Committee, IPEC-Niigata/ECCE-Asia, Japan, 2018
2018	Invited Plenary Speaker, IPEC-Niigata/ECCE-Asia, 2018, Niigata, Japan
2018	Member, IPEC-Niigata/ECCE-Asia Takahashi Award Committee, 2018
2017	Invited Keynote Speaker, 6th International Conference on Renewable Energy Research and Applications, San Diego, USA

2017	Invited Keynote Speaker, 2nd Gwinstek Cross Strait Power Electronics Symposium, Shanghai, China
2017	International Steering Committee (ISC), 2nd Asian Conference on Energy, Power and Transportation Electrification (ACEPT)
2017	General Co-Chairs, IEEE IFEEC - ECCE Asia, 2017
2017	Track Co-Chairs, IEEE IECON 2017
2017─ 2019	AdCom member (elected), IEEE Industrial Electronics Society
2017-2019	Associate Editor, IEEE Trans. on Industrial Informatics
2016	Technical Program Co-Chair, IEEE ICIT 2016
2016	Associate Editor, Electrical Power Engineering, IET
2016	Track co-Chairs, IEEE IECON2016
2016	Track co-Chairs, IEEE International Conference on Electrical Machines (ICEM)
2016	IEEE International conference on Power Electronics, Drives and Energy Systems (PEDES), 2016
2015	Council Members, IEEE Industry Application Society 2015
2015	ECCE Steering Committee, TC Committee Chair -Industrial Drives, IEEE 2015
2015	Member, 2015 IEEE IAS Gerald Kliman Innovator Award Review Committee
2015	Track Co-Chair, Electric Drives, IEEE-IFEEC 2015
2015	Track Co-Chair, Electric Drives, IEEE-IEMDC 2015
2014─ 2016	AdCom member (elected), IEEE Industrial Electronics Society
2014─ 2015	Chair, IEEE Industrial Drives Committee of IEEE IAS
2014	Member, 2014 IEEE IAS Gerald Kliman Innovator Award Review Committee
2014	Member, 2014 IET-EPA Paper Award and Prizes Committee
2013─ 2016	Vice President, Taiwan Power Electronics Association
2014	Technical Program Co-Chair, IEEE ISIE 2014
2014	Guest Associate Editors, special issue on "Modeling and Control of Power Electronics for Renewable Energy and Power Systems." IEEE Journal of Emerging Special Topic on Power Electronics
2014	Special Session Organizer, IPEC 2014
2013	Technical Program Co-Chair, IEEE ISIE 2013, IEEE IFEEC 2013
2013	International Steering Committee Member, IEEE SLED, Germany, 2013
2013	Track Chair, Control of Power Converters, IEEE PEDS, Japan, 2013
2012 – 2013	Technical Committee Paper Review Chair for IDC, IEEE Transactions on Industry Applications
2012 ─ 2013	Vice Chair (Paper), IEEE Industrial Drives Committee of IEEE IAS
2012	International Advisory Board Member, ICRERA, Japan, 2012

2012	Associate Editor, IEEE Trans. on Industry Applications, Joint Special Issue on Drives and Machines in Emerging Applications, 2012
2011 ─ 2013	AdCom member (elected), IEEE Industrial Electronics Society, 2011-2013
2011	Associate Editor, IEEE Trans. on Power Electronics, Joint Special Issue on Power Electronics in Emerging Applications, 2012
2011─ 2013	Associate Editor, Asia Journal Control
2011	Vice Chair, Technical Program Committee, IEEE Energy Conversion Congress and Exposition (ECCE), Phoenix, USA
2010 ─ 2012	Board member of Taiwan Power Electronics Association
2010	Vice Chair, Technical Program Committee, IEEE Energy Conversion Congress and Exposition (ECCE), Atlanta, USA
2010 ─ 2011	Vice Chair (Program), IEEE Industrial Drives Committee of IEEE IAS
2010	Member of Technical Program Committee, IPEC, Japan
2010	Member of International Steering Committee, International Conference on Industrial Technology, IEEE
2009	Vice Chair, Technical Program Committee, IEEE Energy Conversion Congress and Exposition (ECCE), San Jose, USA
2009 ─ 2010	Chair, Taipei Chapter, IEEE IAS
2009 ─ Present	Editorial Board Member, IET, Electrical Power Applications, UK
2008─ 2011	Associate Editor, IEEE Trans. on Industry Applications, IDC
2008 ─ 2009	Secretary of Industrial Drives Committee of IEEE IAS
2008	General Co-Chair, the 6th International Mini-Workshop on Power Electronics and Motion Control
2008 ─ Present	Editorial Board Member, International Journal of Power Electronics
2008 ─ 2011	Editor-in-Chief, Journal of Power Electronics, Taiwan
2008-2010	Board member of Taiwan Power Electronics Association
2007	Organizer and Chair, Industry Panel Discussion, IEEE IECON, 2007
2007	Chair, Post Session, IEEE IECON, 2007
2007	Member of International Steering Committee, the 7th International Conference on Power Electronics, Korea
2007	Member of Program Committee, PCC, Japan
2007	Session Organizer, Industrial Power Conversion Committee of IEEE IAS Annual Meeting, USA
2007	Member of Program Committee, IEEE SMC Society Annual Meeting, Canada
2006	Member of Program Committee, IEEE SMC Society Annual Meeting, USA

2006	Session Organizer, Industrial Power Conversion Committee of IEEE IAS Annual Meeting, USA
2006	Session Organizer, Industrial Drives Committee of IEEE IAS Annual Meeting, USA
2005	Member of Program Committee, IPEC, Japan
2005	Session Chair, IEEE Industry Applications Society Annual Meeting, Hong Kong
2004	Session Chair, IEEE IECON, Korea
2004 – Present	Associate Editor, IEEE Transactions on Industrial Electronics
2000 – Present	Guest Editor, Special Issue on Inverter Technology and Applications, Electrical Monthly
2000– Present	Member of Industrial Power Conversion Committee of IEEE IAS
1999– Present	Member of Industrial Drives Committee of IEEE IAS
1999 – Present	IEEE Power Electronics Society Transactions and Conferences (APEC, PESC and ECCE) paper reviewer
1998 – Present	IEEE Industry Applications Society Transactions and Annual Meeting paper reviewer
1997 –Present	IEE Proc. of Electric Power Applications, paper reviewer
1997 – 2004	IEEE Trans. on Aerospace and Power Electronics, paper reviewer

Honors and Awards:

2021	Eminent Contribution Award, Taiwan Power Electronics Association, 2021.
2020	Award for Industry Collaboration, Ministry of Education, Taiwan, 2020.
2020	Eminent Contribution Award, Electrical Power Division, Ministry of Science and Technology, Taiwan
2019	TECO Award, TECO Technology Foundation, 2019.
2019	The 2018 Prize Paper Award, IEEE Journal of Emerging and Selected Topics in Power Electronics,
2019	Fellow Committee, IEEE Industrial Electronics Society
2018	Academic Outstanding Contribution Award, Taiwan Power & Energy Eng. Association
2018	Eminent Research Award for 2017, Ministry of Science and Technology, Taiwan
2017	Best Paper Award, Asian Conference on Energy, Power and Transportation Electrification (ACEPT), 2017
2017-2018	Vice Chair, Fellow Committee, IEEE Industrial Electronics Society
2017-2019	Fellow Committee, IEEE Industry Applications Society, IEEE Industrial Electronics Society
2016	Best Paper Award, Symposium of Electrical Power Engineering, 2016
2016	Best Paper Award, Taiwan Power Electronics Conference, 2016
2014	*Fellow, IEEE*
2014	Best Paper Award, Taiwan Power Electronics Conference, 2014
2013	Best Paper Award, Symposium of Electrical Power Engineering, 2013

2013	Best Paper Award, IEEE, PEDS, Japan, 2013
2013	Outstanding Research Award for 2012, National Science Council, Taiwan
2012	Outstanding Paper Award, International Conf. on Renewable Energy and Applications, Nagasaki, Japan, 2012
2012	Best Paper Award, Taiwan Power Electronics Conference, 2012
2011	Best Paper Award, Symposium of Electrical Power Engineering, 2011
2010	Best Paper Award, Taiwan Power Electronics Conference, 2010
2009 – 2012	Distinguished Professor, National Taipei University of Technology, Taiwan
2009	Best Paper Award, Taiwan Power Electronics Conference, 2009
2008	Eminent Supervisor Award, Taiwan Power Electronics Association
2007	Reward for Technology (Patent) Transfer, National Science Council, Taiwan
2007	Eminent Research Award, College of EECS, National Taipei U. of Technology
2007	First Class Principal Investigator, National Science Council, Taiwan
2006	First Class Principal Investigator, National Science Council, Taiwan
2006 – 2009	Distinguished Professor, National Taipei University of Technology, Taiwan
2005	First Class Principal Investigator, National Science Council, Taiwan
2004	The Best Presentation Award, IECON 2004, IEEE
2004	Excellent Project Award, TECO Electric & Machinery Co. Ltd.
2003	Eminent Research Award, College of Mechanical and Electrical Engineering, National Taipei U. of Technology
2002	Technical Committee Prize Paper Award, IAS Industrial Drives Committee, IEEE
2002	Eminent Research Award, College of Mechanical and Electrical Engineering, National Taipei U. of Technology
2001	Excellent Award for DSP Competition, Texas Instrument Inc.
2001	Eminent Research Award, College of Mechanical and Electrical Engineering, National Taipei U. of Technology
2000	Research Award, National Science Council, Taiwan
1999	Research Award, National Science Council, Taiwan
1997	The Best Journal Paper Award, John Hopkinson Premium, IEE, UK
1996	Research Award, National Science Council, Taiwan
1995	The Overseas Research Scholarship Award, Higher Education Funding Bodies, UK
1994	The Overseas Research Scholarship Award, Higher Education Funding Bodies, UK

Selected Journal Papers:

1. Z. H. Qiu and Y. S. Lai, "Rapid Prototyping of Digital Twins Control System for IPM Drives Considering Both

Saturation and Spatial Harmonics to Achieve Fast Development and Accurate Emulation," accepted by IEEE Trans. On Industrial Electronics, 2025.

2. Y. S. Lai, X. Y. Wu and Y. Y. Huang, “New Seamless Switching Control Technique between CCM and DCM for Boost PFC without Additional Zero Crossing Point Sensing Circuit,” IEEE Trans. On Industrial Electronics, Vol. 70, No. 1, pp. 12100 -12110, Oct. 2024.
3. Z. H. Qiu and Y. S. Lai, “New On-Line MTPA Angle Search and Control Methods Based on Digital Twins for IPM Synchronous Motor Drives Considering Motor Non-Linearity,” IEEE Access, Vol. 11, pp. 146185 – 146193, Dec. 8, 2023.
4. Y. Y. Huang and Y. S. Lai, “Optimal Inductor Design Method for GaN-Based PFC,” IEEE Access, Vol. 11, 2023.
5. C. K. Lin, C. A. Agustin, J. T. Yu, Y. S. Cheng, F. M. Chen, Y. S. Lai, “A Modulated Model-Free Predictive Current Control for Four-Switch Three-Phase Inverter-Fed SynRM Drive Systems,” IEEE Access, Dec. 6, 2021.
6. C. A. Agustin, J. T. Yu, Y. S. Cheng, C. K. Lin, H. Q. Huang, and Y. S. Lai, “Model-Free Predictive Current Control for SynRM Drives Based on Optimized Modulation of Triple-Voltage-Vector," IEEE Access, September 16, 2021.
7. W. S. Chen and Y. S. Lai, “Module-Based Laboratory Course for the Industry Sponsored Research and Design Master Program,” IEEE Access, July 12, 2021.
8. C. A. Agustin, J. T. Yu, C. K. Lin, J. Jai and Y. S. Lai, “Triple-Voltage-Vector Model-Free Predictive Current Control for Four-Switch Three-Phase Inverter-Fed SPMSM Based on Discrete-Space-Vector Modulation,” ” IEEE Access, April, 2021.
9. Y. S. Lai and M. H. Yu, "On-line Auto-tuning Technique of Switching Frequency for Resonant Converter Considering Resonant Components Tolerance and Variation," IEEE Journal of Emerging and Selected Topics in Power Electronics, Vol. 6, No. 4, pp. 2315 – 2324, 2018.
10. C. K. Lin, J. T. Yu, H. Q. Huang, J. T. Wang, H. C. Yu, and Y. S. Lai, "A Dual-Voltage-Vector Model-Free Predictive Current Controller for Synchronous Reluctance Motor Drive Systems," Energies, Vol. 11, No. 7, July 2018.
11. C. J. Hsu and Y. S. Lai, "Novel On-Line Optimal Bandwidth Search and Auto Tuning Techniques for Servo Motor Drives," IEEE Trans. on Industry Applications, Vol. 53, No. 4, pp.3635-3642, 2017.
12. Y. S. Lai, C. K. Lin, F. P. Chuang, and J. T. Yu, "Model-Free Predictive Current Control for Three-Phase AC/DC Converters," IET Electrical Power Application, Vol. 11, No. 5, pp. 729–739, 2017.
13. C. K. Lin, J. T. Yu, Y. S. Lai, H. C. Yu, and C. I. Peng, "Two-vector-based Modeless Predictive Current Control for Four-switch Inverter-fed Synchronous Reluctance Motors Emulating the Six-switch Inverter Operation," IET Electronics Letters, Vol. 52, No.14, pp.1244-1246, 2016.
14. C. K. Lin, J. T. Yu, Y. S. Lai, and H. C. Yu, "Improved Model-Free Predictive Current Control for Synchronous Reluctance Motor Drives,” IEEE Trans. on Industrial Electronics, Vol. 63, No. 6, pp. 3942 – 3953, 2016.
15. C. K. Lin, J. T. Yu, Y. S. Lai, H. C. Yu, Y. H. Lin and F. M. Chen, “Simplified Model-Free Predictive Current Control for Interior Permanent Magnet Synchronous Motors” IET Electronics Letters, Vol. 52, No. 1, pp. 49 - 50, 2016.
16. Y. S. Lai and Z. J. Su, "New Integrated Control Technique for Two-Stage Server Power to Improve Efficiency under Light Load Condition," IEEE Trans. on Industrial Electronics, Vol. 62, No. 11, pp. 6944 -

6954, 2015.

17. Y. S. Lai, Z. J. Su and Y. T. Chang, "Novel Phase-Shift Control Technique for Full-Bridge Converter to Reduce Thermal Imbalance under Light-Load Condition," IEEE Trans. on Industry Applications, Vol. 51, No. 2, pp. 1651-1659, 2015.
18. Y. S. Lai and K. M. Ho, "Novel On-Line Parameter Tuning Method for Digital Boost PFC with Transition Current Mode," IEEE Trans. on Industry Applications, Vol. 40., No. 4, pp. 2719-2727, 2014.
19. Y. S. Lai, J. S. Su and W. S. Chen, "New Hybrid Control Technique to Improve Light Load Efficiency while Meeting the Hold-up Time Requirement for Two-Stage Server Power," IEEE Trans. on Power Electronics, Vol. 29, No.9, pp. 4763-4775, 2014.
20. Y. S. Lai and J. S. Su, "Novel On-Line Maximum Duty Point Tracking Technique to Improve Two-Stage Server Power Efficiency and Investigation into its Impact on Hold-up Time," IEEE Trans. on Industrial Electronics, Vol. 61, No. 5, pp. 2252 - 2263, 2014.
21. Y. S. Lai, W. T. Lee, Y. K. Lin and J. F. Tsai, "Integrated inverter/converter circuit and control technique of motor drives with dual mode control for EV/HEV applications," IEEE Trans. on Power Electronics, Vol. 29, No. 3, pp. 1358-1365, 2014.
22. Y. S. Lai and B. Y. Chen, "New random PWM technique for full-bridge DC/DC converter with harmonics intensity reduction and considering efficiency," IEEE Trans. on Power Electronics, Vol. 28, No. 11, pp. 5013 - 5023, 2013.
23. B. Y. Chen and Y. S. Lai, "Corrections to Switching control technique of phase-shift controlled full bridge converter to improve efficiency under light load and standby conditions without additional auxiliary components," IEEE Trans. on Power Electronics, Vol. 28, No. 8, pp. 4120, August 2013.
24. Y. S. Lai, Y. T. Chang and B. Y. Chen, "Novel random switching PWM technique with constant sampling frequency and constant inductor average current for digital-controlled converter," IEEE Trans. on Industrial Electronics, Vol. 60, No. 8, pp. 3126-3135, 2013.
25. Y. S. Lai, Y. K. Lin and C. W. Chen, "New hybrid pulse-width modulation technique to reduce current distortion and extend current reconstruction range for three-phase inverter using only DC-link sensor," IEEE Trans. on Power Electronics, Vol. 28, No. 3, pp. 1331 – 1337, 2013.
26. Y. S. Lai and C. A. Yeh, "Response to the Comments on Predictive Digital-Controlled Converter with Peak Current-Mode Control and Leading-Edge Modulation", IEEE Trans. on Industrial Electronics, Vol. 60, No. 1, pp. 235-238, 2013.
27. Y.S. Lai, C. A. Yeh and K. M. Ho, "A family of predictive digital-controlled PFC under boundary current mode control," IEEE Trans. on Industrial Informatics, Vol. 8, No. 3, pp. 448 - 458, 2012.
28. P. Y. Lin and Y. S. Lai, "Voltage control technique for the extension of DC-link voltage utilization of finite speed SPMSM drives," IEEE Trans. on Industrial Electronics, Vol. 59, No. 9, pp. 3392-3402, 2012.
29. B. Y. Chen and Y. S. Lai, "New digital-controlled technique for battery charger with constant current and voltage control without current feedback," IEEE Trans. on Industrial Electronics, Vol. 59, No. 3, pp. 1545

– 1553, 2012.

30. C. A. Yeh and Y. S. Lai, “Digital pulse-width modulation technique for a buck DC/DC converter to reduce switching frequency,” IEEE Trans. on Industrial Electronics, Vol. 59, No. 1, pp. 550-561, 2012.
31. Y. K. Lin and Y. S. Lai, “Pulse-width modulation technique for BLDCM drives to reduce commutation torque ripple without calculation of commutation time,” IEEE Trans. on Industry Applications, Vol. 47, No. 4, pp. 1786-1793, 2011.
32. Y. S. Lai and Y. K. Lin, "A unified approach to zero-crossing point detection of back-EMF for brushless DC motor drives without current and hall sensors," IEEE Trans. on Power Electronics, Vol. 26, No. 6, pp. 1704-1173, 2011.
33. P. Y. Lin and Y. S. Lai, " Novel voltage trajectory control for field weakening operation of induction motor drives," IEEE Trans. on Industry Applications, Vol. 47, No. 1, pp. 122-127, Jan. 2011.
34. K. M. Ho, C. A. Yeh and Y. S. Lai, "Novel digital-controlled transition current mode control and duty compensation techniques for interleaved power factor corrector," IEEE Trans. on Power Electronics, Vol. 25, No. 12, pp. 3085 - 3094, Dec. 2010.
35. P. S. Chen and Y. S. Lai, “Effective EMI filter design method for three-phase inverter based upon software noise separation,” IEEE Trans. on Power Electronics, Vol. 25, No. 11, pp. 2797 - 2806, 2010.
36. L. R. Chen, C. S. Tsai, Y. L. Lin and Y. S. Lai, ”A biological swarm chasing algorithm for tracking the PV maximum power point,” IEEE Trans. on Energy Conversion, Vol. 25, No. 2, pp. 484-493, June 2010.
37. B. Y. Chen and Y. S. Lai, “Switching control technique of phase-shift controlled full bridge converter to improve efficiency under light load and standby conditions without additional auxiliary components,” IEEE Trans. on Power Electronics, Vol. 25, No. 4, pp. 1001-1012, April 2010.
38. Y. T. Chang and Y. S. Lai, “Parameter tuning method for digital power converter with predictive current mode control,” IEEE Transactions on Power Electronics, Vol. 24, No. 12, pp. 2910-2919, Dec. 2009.
39. K. Y. Lee and Y. S. Lai, "Novel circuit design for two-stage AC/DC converter to meet standby power regulations," IET Power Electronics, Vol. 2, No. 6, pp. 625-634, Nov. 2009.
40. Y. T. Chang and Y. S. Lai, “On-line parameter tuning technique for predictive current mode control operating in boundary conduction mode,” IEEE Trans. on Industrial Electronics, Vol. 56, No. 8, pp. 3214-3221, Aug. 2009.
41. Y. S. Lai and C. A. Yeh, “Predictive digital-controlled converter with peak current mode control and leading edge modulation,” IEEE Trans. on Industrial Electronics, Vol. 56, No.6, pp.1854-1863, 2009.
42. Y. K. Lin and Y. S. Lai, “Dead-time elimination of PWM-controlled inverter/converter without separate power sources for current polarity detection circuit,” IEEE Trans. on Industrial Electronics, Vol. 56, No. 6, pp. 2121-2127, 2009.
43. Y. S. Lai and Y. K. Lin, “Novel back-EMF detection technique of brushless DC motor drives for wide range control without using current and position sensors,” *IEEE Trans. on Power Electronics*, Vol. 23, No. 2, pp. 934-940, 2008.

44. Y. S. Lai and Y. K. Lin, “Assessing pulse-width modulation techniques for brushless dc motor drives,” *IEEE Industry Application Magazines*, pp. 34-44, Sep./Oct., 2008.
45. Y. S. Lai, P. S. Chen, S. K. Lee, and J. Chou, "Optimal PWM technique for inverter control with considering the dead-time effects-Part II: applications to IM drives with diode front end," IEEE Trans. on Industrial Applications, Vol. 40, No. 6, pp. 1613-1620, 2004.
46. Y. S. Lai and F. S. Shyu, “Optimal PWM technique for inverter control with considering the dead-time effects-Part I: basic development ," IEEE Trans. on Industrial Applications, Vol. 40, No. 6, pp. 1605-1612, 2004.
47. Y. S. Lai, W. K. Wang, and Y. C. Chen, "Novel switching techniques for reducing the speed ripple of AC drives with Direct Torque Control" IEEE Trans. on Industrial Electronics, Vol. 51, No. 4, pp. 768-775, 2004.
48. Y. S. Lai, F. S. Shyu, and Y. H. Chang, "Novel loss reduction pulse-width modulation technique for brushless DC motor drives fed by MOSFET inverter," IEEE Trans. on Power Electronics, Vol. 19, No. 6, pp. 1646-1652, 2004.
49. Y. S. Lai, F. S. Shyu, and S. S. Tseng “New initial position detection technique for three-phase brushless DC motor without position and current sensors,” IEEE Trans. on Industrial Applications, Vol. 39, No. 2, pp. 485-491, March/April 2003.
50. Y. S. Lai and C. J. Lin, "New hybrid fuzzy controller for direct torque control induction motor drives," IEEE Trans. on Power Electronics, Vol. 18, No. 15, pp. 1211-1219, September 2003.
51. Y. S. Lai, "Modeling and universal controller for vector-controlled induction motor drives," IEEE Trans. on Energy Conversion, Vol. 18, No. 1, pp. 23-32, March 2003.
52. Y. S. Lai and F. S. Shyu, "Topology for hybrid multilevel inverter," IEE Proc. of Electric Power Applications, Vol. 149, No. 6, pp. 449-458, November 2002.
53. F. S. Shyu and Y. S. Lai, "Virtual stage pulse-width modulation technique for multilevel inverter/converter," IEEE Trans. on Power Electronics, Vol. 17, No. 3, pp. 332-341, May 2002.
54. Y. S. Lai, F. S. Shyu, and C. M. Li, "New real time harmonic elimination pulse-width modulation techniques for inverter control," Journal of the Chinese Inst. of Electrical Engineering, Vol. 9, No. 3, pp. 295-309, 2002.
55. Y. S. Lai and J. H. Chen, "A new approach to direct torque control of induction motor drives for constant inverter switching frequency and torque ripple reduction," IEEE Trans. on Energy Conversion, Vol. 16, No. 3, pp. 220-227, September 2001.
56. Y. S. Lai and Y. T. Chang, “Vector-controlled induction motor drives using random switching technique with constant sampling frequency,” IEEE Trans. on Power Electronics, Vol. 16, No. 3, May, pp. 400-409, 2001.
57. Y. S. Lai, J. C. Lin, and J. Wang, "Direct torque control induction motor drives with self-commissioning based on Taguchi methodology," IEEE Trans. on Power Electronics, Vol. 15, No. 6, pp. 1065-1071, Nov.

2000.

58. Y. C. Lou, C. H. Liu, and Y. S. Lai, "Adaptive stator resistance estimation and torque minimization for sensorless direct torque control motor drive at low speed," Journal of the Chinese Inst. of Electrical Engineering. Vol. 8, no. 3, pp. 215-228, 2001.
59. S. S. Perng, Y. S. Lai, and C. H. Liu, “A novel sensorless controller based upon model reference adaptive system for an induction motor drive,” Journal of Chinese Institute of Electrical Engineering, Vol. 7, no. 4, pp. 249-261, 2000.
60. Y. S. Lai, et al., "Implementation and design of a multilevel inverter with harmonic elimination," Technical Journal of Digital Signal Processing, Vol. 1, pp. 121-127, March, 2000.
61. T. P. Chen, C. H. Liu, and Y. S. Lai, "A new harmonic elimination technique for space vector modulation,” Journal of Chinese Institute of Electrical Engineering, Vol. 6, no. 4, pp. 337-345, 1999.
62. Y. S. Lai, “Sensorless vector-controlled induction motor drives using new random technique for inverter control,” IEEE Trans. on Energy Conversion, Vol. 14, No. 4, pp. 1147-1155, Dec., 1999.
63. Y. S. Lai, “New random technique of inverter control for common mode voltage reduction of inverter-fed induction motor drives,” IEEE Trans. on Energy Conversion, Vol. 14, No. 4, pp. 1139-1146, Dec., 1999.
64. Y. S. Lai, “A new random inverter control technique for common mode voltage mitigation of motor drives,” IEE Proc. Electr. Power Appl., Vol. 146, No. 3, pp. 289-296, May, 1999.
65. Y. S. Lai and S. C. Chang, “DSP-based implementation of sensorless vector drive using new random switching technique,” IEE Proc. Electr. Power Appl., Vol. 146, No. 2, pp. 163-172, March, 1999.
66. Y. S. Lai, “A novel random switching technique for high performance inverter control,” Journal of Chinese Institute of Engineers, Vol. 20, No. 2, pp. 131-138, 1997.
67. Y. S. Lai and S. R. Bowes, “A new sub-optimal pulse-width modulation technique for per-phase modulation and space vector modulation,” IEEE Trans. on Energy Conversion, Vol. 12, No. 4, pp. 310-316, 1997.
68. Y. S. Lai, “Random switching techniques for inverter control,” IEE Electronics Letters, Vol. 33, No. 9, pp. 747-749, 1997.
69. Y. S. Lai, “New random space vector modulation techniques for high switching frequency inverter control,” IEE Electronics Letters, Vol. 33, No. 17, pp. 1425-1426, 1997.
70. S. R. Bowes and Y. S. Lai, "The relationship between space vector modulation and Regular-sampled pulse-width modulation, " IEEE Trans. on Industrial Electronics, Vol. 44, No. 5, pp. 670-679, 1997.
71. S. R. Bowes and Y. S. Lai, “Investigations into optimising high switching frequency Regular-Sampled PWM for drives and static power converter,” IEE Proc. Electrical Power Appl., Vol. 143, No. 4, pp.281-292, 1996.

Selected Conference Papers:

1. Y. Y. Huang, Y. S. Lai, S. Y. Ou and C. P. Chang, “Switching Instants Optimization for MHz CrM Totem-Pole PFC without Real-Time Calculations,” Nov. 9-13, ICRERA, Nagasaki, 2024.
2. Z. H. Quiu, Y. S. Lai, C. J. Hsu, W. M. Chiou and S. H. Lai, “Rapid Development Framework of Motor Control Technology for IPM Synchronous Motor Drivers Based on Multi-verification In the Loop,” IEEE IECON, Nov. 3-6, Chicago, 2024.
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35. Y. S. Lai et al. “Apparatus and method for initial position detection of permanent magnetism for three-phase synchronous motor,” Taiwan Patent, 00546913, Aug., 2003.
36. Y. S. Lai et al. “Detection apparatus of neutral line for the two-pole socket with three wires,” Taiwan Patent, 00545581, Aug., 2003
37. Y. S. Lai et al., “Inverter control method to reduce torque and speed ripple for AC motor drives,” Taiwan Patent, 00466823, Dec., 2001.
38. Y. S. Lai et al., “Apparatus and method for on-line parameter tuning of sensorless induction motor drives,” Taiwan Patent, 00546913,” Taiwan Patent, 00441161, June, 2001.
39. Y. S. Lai, “Apparatus and method of Pulse-width modulation for common-mode voltage reduction of voltage source inverter,” Taiwan Patent, 00439350, June, 2001
40. Y. S. Lai, “Apparatus and method of Pulse-width modulation for voltage source inverter,” Taiwan Patent, 00350170, Jan., 1999

RESEARCH ACTIVITIES:

Projects Sponsored by Ministry of Science and Technology:

1. Design and Implementation of High Bandwidth Servo Drives with SiC Inverter and Delta-Sigma ADC under High Inertia Condition, (Ministry of Science and Technology, 2017-2020, Sole PI)
2. Project of Research Development and Working Group for Electrical Power Engineering Division, (Ministry of Science and Technology, 2017, Sole PI)
3. Project of Research Development and Working Group for Electrical Power Engineering Division, (Ministry of Science and Technology, 2016, Sole PI)
4. Technology Development of Bandwidth Improvement and Vibration Suppression of Inverter-Controlled Servo Drives(Ministry of Science and Technology, 2014-2017, Sole PI)
5. Technology Development of Inverter-Controlled Infinite Speed Interior Permanent Synchronous Motor Drives for High Speed Applications (National Science Council, 2011-2014, Sole PI)
6. Technology Development of Inverter-Controlled Permanent Synchronous Motor Drives for High Speed Applications (National Science Council, 2008-2011, Sole PI)
7. Design and Implementation of Three-Level Inverter (National Science Council, 2005-2008, Sole PI)
8. Design and Implementation of PWM Controller (National Science Council, 2003-2005, Sole PI)
9. Development of Key Technology of Efficiency Promotion for Brushless DC Motor Drives (National Science Council, 2003-2004, Sole PI)
10. Parameter Tuning of Controller and Motor Parameter Identification of Direct Torque Control Drives (National Science Council, 2002-2003, Sole PI)
11. Design and Implementation of Multilevel Inverter (National Science Council, 1999-2002, Sole PI)
12. Direct Torque Control of Induction Motor Drives (National Science Council, 1996-1999, Sole PI)

Projects Sponsored by the Industry and Others:

13. Design of Switching Power Supply, (Adapter Co. Ltd., June. 1, 2018-May. 2019, Sole PI)
14. Implementation of AC servo system on RX 66T, (Renesas Electronics Taiwan Co., Ltd., March, 2018-Sep., 2018, Sole PI)
15. Implement DRP current-loop control for dual AC servo system, (Renesas Electronics Taiwan Co., Ltd., July, 2017-Dec., 2017, Sole PI)
16. Development of High Speed Spindle for IPMSM, (Hiwin, Jan. 2017-June, 2018)
17. Development of dual AC servo solution on RZ/T1, (Renesas Electronics Taiwan Co., Ltd., Sep., 2016-March, 2017, Sole PI)
18. Development of position control by RZ/T1 for AC servo solution, (Renesas Electronics Taiwan Co., Ltd., June, 2016-Nov., 2016, Sole PI)
19. Simulation of Power Supply, (Acbel, June, 2016- July, 2017, PI)

20. Resonance Identification and Suppression, (YUNGTAY Engineering Co. Ltd., Feb. 2015-Jan., 2016, Sole PI)
21. Digital Controlled Switching Power Supply, (Adapter Co. Ltd., Jan. 1, 2015-Dec. 2015, Sole PI)
22. Development of speed loop control by RZ/T1 for AC servo solutions, (Renesas Electronics Taiwan Co., Ltd., Dec, 2015-March, 2016, Sole PI)
23. Design of Multi-Inverters in Parallel, (ITRI, April.-Nov., 2015, Sole PI)
24. RZ/T1 AC servo control and decoding algorithm solution development, (Renesas Electronics Taiwan Co., Ltd., April, 2015-Sep., 2015, Sole PI)
25. Design of 4 kVA Inverter, (ITRI, Jan.-April., 2015, Sole PI)
26. High power converter with high efficiency, (Adapter Co. Ltd., Dec. 1, 2014-Oct. 2015, Sole PI)
27. RX64M MTPA and FOC solution development, (Renesas Electronics Taiwan Co., Ltd., July, 2014-Jan., 2015, Sole PI)
28. Initial Position Identification of PM Motor Rotor, (ITRI, April-Nov., 2014, Sole PI)
29. Study of High-efficiency Power Supply for Next Generation (2nd stage) (Hitachi Information & Telecommunication Engineering, Ltd., Japan, Aug., 2013-Sep., 2014, Sole PI)
30. RX62T MTPA development with MCRP07 Firmware, (Renesas Electronics Taiwan Co., Ltd., October, 2013-March, 2014, Sole PI)
31. Development of Self-commissioning Techniques for Permanent Synchronous Motor Drives, (Chroma, Aug. 2013 – July, 2014, Sole PI)
32. Multi-source Power Net for Vehicle, (ITRI, July-Dec., 2013, Sole PI)
33. RX62T 3-level Inverter Motor Control Solution-Phase 2, (Renesas Electronics Taiwan Co., Ltd., April, 2013-Sep, 2013, Sole PI)
34. Digital Power Supply, (Zippy Co., Ltd., March, 2013-March 2014)
35. Study of High-efficiency Power Supply for Next Generation, (Hitachi Computer Peripherals Co. LTD., Japan, Aug., 2012-Sep., 2013, Sole PI)
36. RX62T 3-level Inverter Motor Control Solution, (Renesas Electronics Taiwan Co., Ltd., October, 2012-March, 2013, Sole PI)
37. Duplication of RX210 Motor Control Solution Board, (Renesas Electronics Taiwan Co., Ltd., October, 2012-May, 2012, Sole PI)
38. Boost Control and Drives for Motor/Inductor Modes, (ITRI, March 2012-Nov. 2012, Sole PI)
39. Identification of Parameters of PMSM, (ITRI, March 2012-Nov. 2012, Sole PI)
40. Investigation of Digital-controlled Power Converters (Super Micro Co., Ltd., USA, Dec., 2011-Nov., 2012, Sole PI)
41. Self-commission of control parameter of the digital power study, (Hitachi Computer Peripherals Co. LTD., Japan, Aug., 2011-Sep., 2012, Sole PI)

42. The Development of RX210 Motor Control Solution, (Renesas Electronics Taiwan Co., Ltd., October, 2011-March, 2012, Sole PI)
43. Study on Vector Control of Permanent Magnet Motor and AC/DC Conversion, (ITRI, March 2011-Oct. 2011, Sole PI)
44. The Development of RX62T Motor Control with PFC and Realization of R32C/118 Compressor Solution, (Renesas ElectronicsTaiwan, Oct, 2010-Sep., 2011, Sole PI)
45. Development of Digital-Controlled IC for High Efficiency Power Converters, (Weltrend Electronics, CO. Ltd., Oct, 2010-Sep., 2011, Sole PI)
46. Study of High-efficiency Power Supply for Next Generation, (Hitachi Computer Peripherals Co. LTD., Japan, Aug., 2010-Sep., 2011, Sole PI)
47. Digital-Controlled AC/DC Converter for Server Applications, (Weltrend Electronics, CO. Ltd., July, 2010-Sep., 2011, Sole PI)
48. Development of DC/AC Converter for Back-up Power of Wireless Base Station, (Chung-Hsin Electric and Machinery Manufacturing Corp. (CHEM), Aug., 2010-Feb. 2011, Sole PI)
49. ON Line UPS Design Reference Implementation (Phase III) (Renesas electronicsTaiwan, April, 2010-Sep., 2010, Sole PI)
50. The development of the RX62T/RX621 for Motor Control Application (Renesas Electronics Taiwan Co., Ltd., April, 2010-September, 2010, Sole PI)
51. Design and Implementation of Inverter for Residential Applications of Fuel Cells-Phase II (Chung-Hsin Electric and Machinery Manufacturing Corp. (CHEM), Jan., 2010-Dec. 2010, Sole PI)
52. Study of Digital Control Power Supply (IV) (Hitachi Computer Peripherals Co. LTD., Japan, April, 2009-March, 2010, Sole PI)
53. ON Line UPS Design Reference Implementation (Phase II) (Renesas Technology Taiwan, September, 2009-March, 2010, Sole PI)
54. Design and Implementation of Inverter for Residential Applications of Fuel Cells (Chung-Hsin Electric and Machinery Manufacturing Corp. (CHEM), May, 2009-Dec. 2009, Sole PI)
55. R32C/118 Integrated Solution for Small Compressor and E-motorcycle Technology Research in Taiwan for the Future (Renesas Technology Taiwan, September, 2009-March, 2010, Sole PI)
56. Integration for Application Notes & Motor Control Software and Two Phase Modulation Implementation (Renesas Technology Taiwan, March, 2009-September, 2009, Sole PI)
57. OFF LINE UPS Design Reference Implementation (Phase 2) and ON LINE UPS Design Reference Implementation (Renesas Technology Taiwan, March, 2009-September, 2009, Sole PI)
58. R8C Base Motor Control (Renesas Technology Taiwan, September, 2008-March, 2009, Sole PI)
59. Off Line UPS Design Reference Implementation (Phase 1) (Renesas Technology Taiwan, September, 2007-March, 2009, Sole PI)
60. Study of Digital Control Power Supply (III) (Hitachi, Ltd. Japan, April, 2008-March, 2009, Sole PI)

61. Implementation of Power Converter (ITRI, July, 2008-Dec., 2008, Sole PI)
62. Development of Multi-channel Interleaved Digital DC-DC Converter (Renesas Technology Taiwan, April, 2008-Sep., 2008, Sole PI)
63. Motor Control Method for SH7211 Implementation(Phase 2) (Renesas Technology Taiwan, April, 2008-Sep., 2008, Sole PI)
64. Design and Implementation of DC Converter for Vehicle Applications (TECO Electric & Machinery Co. Ltd., March, 2008-Nov., 2008, Sole PI)
65. Topology Evaluation of DC Converter for Vehicle Applications (TECO Electric & Machinery Co. Ltd., Dec., 2007-Feb., 2008, Sole PI)
66. Motor control method for SH7211 implementation(Phase I) (Renesas Technology Taiwan, Oct., 2007-March., 2008, Sole PI)
67. Development of PAM converter with PFC for air-conditioning applications (SAMPO, Corp., Aug. 2007, June, 2008, Sole PI)
68. Development of high power DC-DC converter for wire machining (ITRI, July, 2007-June, 2008, Sole PI)
69. Development of converter with energy recovery for wire machining (ITRI, July, 207-June, 2008, Sole PI)
70. Motor drives for 180-degree since-wave BLDCM with Hall sensor using M16C (Renesas Technology Taiwan, July, 2007-Sep., 2007, Sole PI)
71. Development of synchronous phase-shift full-bridge digital DC-DC converter, (Renesas System Solutions Asia, Singapore, April 2007-March, 2008, Sole PI)
72. Study of digital control power supply II (Hitachi, Ltd. Japan, April, 2007-March, 2008, Sole PI)
73. Digital power for PFC meeting the standby power regulation (ITRI, March, 2007-Nov. 2007, Sole PI)
74. ZVS 800 W evaluation board (Infineon Technologies Asia Pacific Pte. Ltd, Singapore, Jan. 2007-Dec. 2007, Sole PI)
75. A development of digital PFC-phase II (Renesas System Solutions Asia, Singapore, Nov. 2006-March, 2007, Sole PI)
76. Study of digital control power supply (Hitachi, Ltd. Japan, April, 2006-March, 2007, Sole PI)
77. A development of digital PFC-phase I (Renesas System Solutions Asia, Singapore, April. 2006-Oct., 2006, Sole PI)
78. Design of Control Chip for Resonant AC/DC Converter (ITRI, April, 2006-Nov. 2006, Sole PI)
79. 800 W soft witching CCM PFC with 21 W AUX power (Infineon Technologies Asia Pacific Pte. Ltd, Singapore, Jan. 2006-Dec. 2006, Sole PI)
80. Study on DSP applications to switching power supply (Renesas System Solutions Asia, Singapore, Oct. 2005-March, 2006, Sole PI)
81. Magnetic Charger Device (Renfoss, Inc., June, 2005- Dec. 2005, Sole PI)
82. 1.5KW-24V/45VPower Converter (ITRI, March, 2005-Nov. 2005, Sole PI)

83. Study on digital power supply (Hitachi Micro System Solutions Asia, Singapore, Nov. 2004-April, 2005, Sole PI)
84. AC/DC Converter with PFC (Infineon Technologies Asia Pacific Pte. Ltd, Singapore, Nov. 2004-Sep. 2005, Sole PI)
85. Bi-directional Converter (TECO Electric & Machinery Co. Ltd., July, 2004-June, 2005, Sole PI)
86. Random PWM Technique with Regular Sampling (TECO Electric & Machinery Co. Ltd., July, 2004-Dec., 2004, Sole PI)
87. Driver of MCU-controlled Inverter for Compressor (ITRI, March, 2004-Nov. 2004, Sole PI)
88. Power Stage for PAM-Controlled Brushless DC Motor Drives (ITRI, March 2004-Nov. 2004, Sole PI)
89. High Power Switching Mode Power Supply with Multiple Outputs (Hitachi Micro System Solutions Asia, Singapore, March 2004-Oct., 2004, Sole PI)
90. Wire Cut Machining (ITRI, March, 2003-Nov. 2003, Sole PI)
91. Implementation of High Efficiency Power Control (Hitachi Micro System Solutions Asia, Singapore, March 2003-Feb., 2004 Sole PI)
92. Controller for Electric Discharger (Chang-Horng Electronics CO., Ltd., August, 2003-July, 2004, Sole PI)
93. Driver Circuit of Motor Drives for Home Appliance Applications (Hitachi Micro System Solutions Asia, Singapore, March 2002-Feb., 2003, Sole PI)
94. Applications of Hitachi Power Control IC (Hitachi Micro System Solutions Asia, Singapore, March 2002-Feb. 2003 Sole PI)
95. Inverter-Controlled Screw Type Chiller (Bureau of Energy, Ministry of Economics Affairs, Aug. 2001-Dec. 2001, Sole PI)
96. Control of Brushless DC Motor Drives without Sensor (Hitachi Micro System Solutions Asia, Singapore, March 2001-Feb., 2002 Sole PI)
97. EMI Suppression for Inverter (ITRI, May, 2001-Nov. 2001, Sole PI)
98. DVD Spindle Drives Control (Jin-Chen Co., Ltd., March 2000-July, 2001 Sole PI)
99. Study on Energy Saving for using Inverter-Controlled Air-Conditioner(Bureau of Energy, Ministry of Economics Affairs, Jan. 2000-Dec. 2000, Sole PI)
100. Motor Drives for Electric Scooter (Shihlin Electric Co., Ltd., Jan. 1999-Dec. 2000, Sole PI)
101. Investigations into the Applications of High Power Inverter to Air-Conditioner (Bureau of Energy, Ministry of Economics Affairs, Feb. 1999-July. 1999, Sole PI)
102. State-of-Charge Indicator, Voltage and Current Sensing Modules for Electric Scooter (Bureau of Energy, Ministry of Economics Affairs, Jan. 1999-Dec. 1999, Sole PI)
103. Modeling and Pulse-width Modulation Control of High Power Inverter (ITRI, Aug., 1998-Dec. 2000, Sole PI)
104. Control of Permanent Magnet Synchronous Motor (ITRI, Aug., 1998-Nov. 2000, Sole PI)

Selected Short Courses and Invited Speeches:

1. Invited Plenary Speaker, “Energy Efficiency of Motor, Motor Drives and Power Converters”, International Power Electronics Conference- IEEE ECCE Asia, Niigata, Japan, May 20-24 5-8, 2018.
2. Invited Keynote Speaker, “Vision: Motor Drives”, TECO World RD Conference, China, August 29, 2018
3. Invited Speaker, “Conducted Noise Filter for Single-Phase Converter and Three-Phase Inverter”, LG Electronics, South Korea, August 16, 2018
4. Invited Speaker, “Roles of Power Electronics after COP21”, International Conference on Renewable Energy Research and Applications, Nov. 5-8, 2017.
5. Invited Keynote Speaker, 2nd Gwinstek Cross Strait Power Electronics Symposium, Shanghai, China, 2017
6. Invited Speaker, “Development of AC Servo Drives using RZ/T1”, Renesas DevCon, September 8, 2016
7. Invited Speaker, “Motors Drive the World! Drives Drive Motors!”, MEAN WELL Enterprises Co., Ltd., September 8, 2015
8. Invited Speaker, “Development of Digital Power”, NCTU, HsinChiu, April 29, 2015
9. Invited Speaker, “Development of Fully Digital-Controlled UPS”, University of Southern Denmark, Odense, Denmark, April 16, 2015
10. Keynote Speaker, “Development of Converters and Motor Drives using Renesas MCUs”, Renesas Electronics Professor Conference, Yi-Lan, Dec. 14, 2014.
11. Invited Speaker, “Development of Motor Drives”, RichTek Co. LTD., HsinChiu, Oct. 21, 2014
12. Invited Speaker, “Induction Control Technology-High Speed Control”, ITRI, HsinChiu, Oct. 3, 2013
13. Invited Speaker, “Introduction to Center for Power Electronics Technology”, The University of Tennessee, Knoxville (UTK), USA, September 14, 2012
14. Invited Speaker, “Applications of Inverter to Energy Saving”, National Taiwan University, Jan. 3, 2011
15. Invited Speaker, “Applications of Inverter to Energy Saving”, National Taiwan University of Science and Technology, Dec. 13, 2010
16. Invited Speaker, Renesas Forum, China, Beijing, Shenzhen and Shanghai, “Development of Fully Digital-Controlled On-Line UPS using One MCU”, Dec. 2-Dec.8, 2010
17. Invited Speaker, “Power Saving Techniques”, Providence University, Jan. 8, 2010
18. Invited Speaker, “Development of Digital Power Technology”, ACBEL POLYTECH Inc., August 5, 2009
19. Invited Speaker, “PAM and PWM Control of Brushless DC Motor Drives”, National Center University, May 25, 2009
20. Invited Speaker, “Projects for Power Supply Sponsored by the Industry at NTUT”, National Cheng-Kung University, March 3, 2009
21. Invited Keynote Speaker, Renesas Forum, “Development of Digital Power Technology”, Taipei, Dec. 10, 2008
22. Invited Speaker, “Digital Controller Design for Buck Converter with the Reduction of Phase Transition and Output Voltage Oscillation under Transient State” Dong-Nan University, Taipei, Nov. 10, 2008

23. Invited Keynote Speaker, Renesas Forum, “Introduction to the Technology Development of Brushless DC Motor Drives”, Taipei, Nov. 7, 2007
24. Invited Keynote Speaker, Infineon Forum, “New EMI Filter Design Method For Single Phase Power Converter”, Taipei, May, 15, 2007
25. Speaker to International Light Electrical Vehicle Meetings and Conference, March, 2007, Hisin-Chu, Taiwan, Topic: Design Consideration of Motor Drives for the Applications of Light Electric Vehicle
26. Short Course for Shihlin Electric, Inc., Hisin-Chu, Taiwan, January, 2007, Topics: Switching Mode Power Supply Design
27. Short Course for Delta Electronics, Inc., Chung-Li, Taiwan, December, 2006, Topics: Analog Power Supply Design
28. Invited Speaker to National Taiwan University, Taipei, Taiwan, August, 2006, Topics: Projects of Power Supply Sponsored by the Industry
29. Invited Speaker to National Taiwan University, Taipei, Taiwan, May, 2006, Topics: Technology for Inverter-Controlled Brushless DC Motor Drives
30. Invited Speaker to ITRI, Hisin-Chu, Taiwan, May, 2005, Topics: Future Technology Development of Power Converter
31. Short Course for Delta Electronics, Inc., Chung-Li, Taiwan, September, 2005, Topics: Technology of Power Factor Correction
32. Short Course for Delta Electronics, Inc., Chung-Li, Taiwan, July, 2005, Topics: Technology of Switching Mode Power Converters
33. Invited Speaker to Rockwell Automation Taiwan, Co. Ltd., Taipei, Taiwan, July, 2005, Topics: PWM and Control Technology for Three-Phase Inverters
34. Invited Speaker to Renesas System Solution, Tokyo, Dec. 12, 2004, Topics: Application of DSP to Power Electronics
35. Invited Speaker to TECO Electric & Machinery Co. Ltd., July, 2004, Topics: Random PWM Technology for Vector Control
36. Invited Speaker, Taipei Power Forum, “Technology development of motor drives,” Taipei, Dec. 1-3, 2004
37. Short Course for ITRI, Hisin-Chu, Taiwan, November, 2004, Topics: Technology of Switching Mode Power Converters
38. Short Course for Tze-Chiang Foundation, Hisin-Chu, Taiwan, July, 2004, Topics: PWM Technology and Design of Controller for Induction Motor Drives
39. Short Course for ITRI, Hisin-Chu, Taiwan, May, 2003, Topics: Technology of Inverter Control
40. Short Course for ITRI, Hisin-Chu, Taiwan, August, 2002, Topics: Technology of Inverter-Controlled Drives
41. Invited Speaker to ITRI, Hisin-Chu, August, 2001, Topics: High Power Inverters
42. Short Course for ITRI, Hisin-Chu, August, 2000, Topics: Design and Applications of Inverter

43. Short Course for ITRI, Hisin-Chu, August, 1999, Topics: Vector and Direct Torque Control of Induction Motor Drives