

Chengbin Ma

Associate Professor, Ph.D.
Director of Dynamic Systems Control (DSC) Laboratory
Room 219, Univ. of Michigan-Shanghai Jiao Tong Univ. Joint Institute
800 Dongchuan Road, Minhang District, Shanghai 200240, P. R. China

Email: chbma@sjtu.edu.cn
Phone: +86-21-3420-6209 (office)
Fax: +86-21-3420-6525 (UM-SJTU Joint Institute)
Web: <http://umji.sjtu.edu.cn/faculty/chengbin-ma/>
Lab: <http://umji.sjtu.edu.cn/lab/dsc/>



Education

Ph.D., Electrical Engineering, The University of Tokyo, Sep. 2004.

- Adviser: Professor Yoichi Hori
- Thesis: Fractional Order Control and Its Applications in Motion Control

M.A., Electrical Engineering, The University of Tokyo, Sep. 2001.

B.S. with honor, Industrial Automation, East China University of Science and Technology, July 1997.

Technical Background

Systems, Control and Mechatronics

Research Fields

Energy and battery management, wireless power transfer, mechatronic control, and wide applications in electronic devices, electric vehicles, microgrids, and smart grids, etc.

Employment

Faculty Member of Electrical Engineering and Computer Science, Univ. of Michigan-Shanghai Jiao Tong Univ. Joint Institute (JI), Shanghai Jiao Tong University, Shanghai, China, Aug. 2008–present.

Postdoctoral Research Assistant, IMS-Mechatronics laboratory, Department of Mechanical and Aeronautical Engineering, University of California Davis, California, USA, Nov. 2006–Mar. 2008.

R&D Researcher, Servo Laboratory, Fanuc Limited, Yamanashi, Japan, Oct. 2004–Oct. 2006.

Government Worker, Nanshi District Government, Shanghai, China, July 1997–Mar. 1999.

Teaching

1. **VG450** Global Multidisciplinary Design Project I, Instructor/Coordinator, Fall 2016-present
2. **VE450** Major Design Experience, Instructor/Coordinator, Summer/Fall 2010-present
3. **VM552** Mechatronic Systems Design, Instructor, Summer 2010-present
4. **VE216** Introduction to Signals and Systems, Instructor, Spring 2012-2015
5. **VM360** Modeling, Analysis and Control of Dynamic Systems, Instructor, Fall 2009
6. **VE460/VM461** Control Systems Analysis and Design /Automatic Control, Instructor, Summer 2009
7. **VE311** Electronic Circuits, Instructor, Fall 2008

Graduate Student Advising

4 PhD Students, 8 Master students

Alumni

5 PhD Students, 7 Master students

Publications

Journal Papers

– Supervised students are delineated with an asterisk (*).

1. S. Liu*, M. Liu*, X. Zhu, **C. Ma**: “Tunable Class E2 DC-DC Converter with High-Efficiency and Stable-Output-Power for 6.78 MHz Wireless Power Transfer”, *IEEE Transactions on Power Electronics*, accepted on Sep. 29th, 2017.
2. M. Fu*, H. Yin*, M. Liu*, **C. Ma**: “A 6.78 MHz Multiple-Receiver Wireless Power Transfer System with Constant Output Voltage and Optimum Efficiency”, *IEEE Transactions on Power Electronics*, accepted on Jun. 30th, 2017.
3. M. Liu*, M. Fu*, **C. Ma**: “Battery Cell Equalization via Megahertz Multiple-Receiver Wireless Power Transfer”, *IEEE Transactions on Power Electronics*, accepted on May 15th, 2017.
4. M. Liu*, S. Liu*, **C. Ma**: “A High Efficiency/Output Power and Low Noise Megahertz Wireless Power Transfer System over A Wide Range of Mutual Inductance”, *IEEE Transactions on Microwave Theory and Techniques*, accepted on Mar. 27th, 2017.
5. M. Fu*, H. Yin*, **C. Ma**, “Megahertz Multiple-Receiver Wireless Power Transfer Systems with Power Flow Management and Maximum Efficiency Point Tracking”, *IEEE Transactions on Microwave Theory and Techniques*, accepted on Mar. 6th, 2017.
6. M. Liu*, C. Zhao*, **C. Ma**, “Battery Charging Profile-Based Parameter Design of A 6.78-MHz Class E² Wireless Charging System”, *IEEE Transactions on Industrial Electronics*, accepted on Jan. 29th, 2017.

7. S. Liu*, M. Liu*, S. Yang, **C. Ma**, X. Zhu, "A Novel Design Methodology for High-Efficiency Current-Mode and Voltage-Mode Class-E Power Amplifiers in Wireless Power Transfer Systems", *IEEE Transactions on Power Electronics*, Vol. 32, No. 6, pp. 4514-4523, Jun. 2017.
8. M. Liu*, Y. Qiao*, S. Liu, **C. Ma**: "Analysis and Design of A Robust Class E² DC-DC Converter for Megahertz Wireless Power Transfer", *IEEE Transactions on Power Electronics*, Vol. 32, No. 4, pp. 2835-2845, Apr. 2017.
9. M. Liu*, M. Fu*, **C. Ma**: "Low-Harmonic-Contents and High-Efficiency Class E Full-Wave Current-Driven Rectifier for Megahertz Wireless Power Transfer Systems", *IEEE Transactions on Power Electronics*, Vol. 32, No. 2, pp. 1198-1209, Feb. 2017.
10. M. Fu*, H. Yin*, M. Liu*, **C. Ma**: "Loading and Power Control for A High-Efficiency Class E PA Driven Megahertz WPT System", *IEEE Transactions on Industrial Electronics*, Vol. 63, No. 11, pp. 6867-6876, Nov. 2016.
11. C. Zhao*, H. Yin*, C. Ma: "Quantitative Efficiency and Temperature Analysis of Battery-Ultracapacitor Hybrid Energy Storage Systems", *IEEE Transactions on Sustainable Energy*, Vol. 7, No. 4, pp. 1791-1802, Oct. 2016.
12. **C. Ma**, M.-Y. Chow, A. Khaligh, H. Razik, "Guest Editorial: Special Section on Networked Energy Systems: Architectures, Communication, and Management", *IEEE Transactions on Power Electronics*, Vol. 12, No. 5, pp. 1896-1899, Oct. 2016.
13. H. Yin*, W. Zhou, C. Zhao*, M. Li, **C. Ma**, C. Zhao: "An Adaptive Fuzzy Logic Based Energy Management Strategy on Battery/Ultracapacitor Hybrid Electric Vehicles", *IEEE Transactions on Transportation Electrification*, Vol. 2, No. 3, pp. 300-311, Sep. 2016.
14. H. Yin*, C. Zhao*, M. Li, M.-Y. Chow, **C. Ma**: "A Game Theory Approach to Energy Management of An Engine-generator/Battery/Ultracapacitor Hybrid Energy System", *IEEE Transactions on Industrial Electronics*, Vol. 63, No. 7, pp. 4266-4277, July 2016.
15. F. Baronti, M.-Y. Chow, **C. Ma**, H. Rahimi-Eichi, R. Saletti: "The Role of Embedded Systems in Electric Energy Transfer from Grid to Vehicle", *EURASIP Journal on Embedded Systems*, No. 1, May 2016.
16. M. Fu*, T. Zhang*, X. Zhu, P. Luk, **C. Ma**: "Compensation of Cross Coupling in Multiple-Receiver Wireless Power Transfer Systems", *IEEE Transactions on Industrial Informatics*, Vol. 12, No. 2, pp. 474-482, Apr. 2016.
17. C. Zhao*, H. Yin*, **C. Ma**: "Quantitative Evaluation of LiFePO₄ Battery Cycle Life Improvement Using Ultracapacitors", *IEEE Transactions on Power Electronics*, Vol. 31, No. 6, pp. 3989-3993, June 2016.
18. M. Liu*, M. Fu*, **C. Ma**: "Parameter Design for A 6.78-MHz Wireless Power Transfer System Based on Analytical Derivation of Class E Current-Driven Rectifier", *IEEE Transactions on Power Electronics*, Vol. 31, No. 6, pp. 4280-4291, June 2016.
19. C. Zhao*, Y. He*, Y. Noguchi, Z. Yang, **C. Ma**: "Equivalent Series Resistance-Based Energy Efficiency Analysis of A Battery Semi-Active Hybrid System", *IEEE Transactions on Energy Conversion*, Vol. 30, No. 7, pp. 3952-3963, July 2015.
20. Y. Qiao*, **C. Ma**: "The Assignment of Generalized Time Constant for A Non-All-Pole System", *IEEE Transactions on Industrial Electronics*, Vol. 62, No. 7, pp. 4276-4287, July 2015.

21. M. Fu*, H. Yin*, X. Zhu, **C. Ma**: “Analysis and Tracking of Optimal Load in Wireless Power Transfer Systems”, *IEEE Transactions on Power Electronics*, Vol. 30, No. 7, pp. 3952-3963, July 2015.
22. M. Fu*, T. Zhang*, **C. Ma**, X. Zhu: “Efficiency and Optimal Loads Analysis for Multiple-Receiver Wireless Power Transfer Systems”, *IEEE Transactions on Microwave Theory and Techniques*, Vol. 63, No. 3, pp. 801-812, Mar. 2015.
23. H. Yin*, C. Zhao*, M. Li, **C. Ma**: “Utility Function-Based Real-Time Control of A Battery-Ultracapacitor Hybrid Energy System”, *IEEE Transactions on Industrial Informatics*, Vol. 11, No. 1, pp. 220-231, Feb. 2015.
24. X. Wu, **C. Ma**: “Single-Parameter Skidding Detection and Control Specified for Electric Vehicles”, *Journal of the Franklin Institute*, Vol. 352, pp. 724-743, 2015.
25. Y. Qiao*, J. Cao, **C. Ma**: “Transient Response Control of Two-Mass System via Polynomial Approach”, *ASME Journal of Dynamic Systems Measurement and Control*, Vol. 136, No. 6, 064503, Aug. 2014.
26. M. Chow, F. Baronti, S. S. Williamson, **C. Ma**: “Guest Editorial: Special Section on Information and Control Technologies in the Electrification of Transportation”, *IEEE Transactions on Industrial Informatics*, Vol. 10, No. 3, pp. 1904-1906, Aug. 2014.
27. M. Fu*, **C. Ma**, X. Zhu: “A Cascaded Boost-Buck Converter for High Efficiency Wireless Power Transfer Systems”, *IEEE Transactions on Industrial Informatics*, Vol. 10, No. 3, pp. 1972-1980, Aug. 2014.
28. **C. Ma**, J. Cao, Y. Qiao*: “Polynomial Method Based Design of Low Order Controllers for Two-Mass System”, *IEEE Transactions on Industrial Electronics*, Vol. 60, No. 3, pp. 969-978, Mar. 2013.
29. J. Cao, **C. Ma**, Z. Jiang, S. Liu: “Nonlinear Dynamic Analysis of Fractional Order Rub-impact Rotor System”, *Communications in Nonlinear Science and Numerical Simulation*, Vol. 16, No. 3, pp. 1443-1463, Mar. 2011.
30. **C. Ma**, M. Xu, H. Wang*: “Dynamic Emulation of Road/Tire Longitudinal Interaction for Developing Electric Vehicle Control Systems”, *Vehicle System Dynamics*, Vol. 49, No. 3, pp. 433-447, Mar. 2011.
31. J. Cao, **C. Ma**, H. Xie, Z. Jiang: “Nonlinear Dynamics of Duffing System with Fractional Order Damping”, *ASME Journal of Computational and Nonlinear Dynamics*, 041012-1, Vol. 5, Oct. 2010.
32. **C. Ma**, Y. Hori: “Fractional-Order Control: Theory and Applications in Motion Control”, *IEEE Industrial Electronics Magazine*, Vol. 1, No. 4, pp. 6-16, 2007.
33. **C. Ma**, Y. Hori: “The Time-Scaled Trapezoidal Rule for Discrete Fractional Order Controllers”, *Nonlinear Dynamics*, Kluwer Academic Publishers, Vol. 38, pp. 171-180, 2004.
34. **C. Ma**, Y. Hori: “Time-domain Evaluation of Fractional Order Controllers’ Direct Discretization Methods”, *IEEE Transactions on Industry Applications*, Vol. 124, No. 8, pp. 837-842, 2004 (IEEJ: The Institute of Electrical Engineers of Japan).
35. **C. Ma**, Y. Hori: “Backlash Vibration Suppression Control of Torsional System by Novel Fractional Order PID^k Controller”, *IEEE Transactions on Industry Applications*, Vol. 124, No. 3, pp. 312-317, 2004.
36. **C. Ma**, Y. Fujii and K. Yamaji: “China’s electric power sector’s options considering its environmental impacts”, *Environmental Economics and Policy Studies*, Springer-Verlag Publisher, Vol. 5, No.4, pp. 319-340, 2002.

Conference Papers

– Supervised students are delineated with an asterisk (*).

1. Y. Wang*, H. Yin*, S. Han*, A. Alsabbagh*, **C. Ma**, “A Novel Switched Capacitor Circuit for Battery Cell Balancing Speed Improvement”, IEEE International Symposium on Industrial Electronics, Jun. 19–21, 2017, Edinburgh, UK.
2. X. Fu*, M. Liu*, Z. Tang*, **C. Ma**, “Design Procedure of A Class E² DC-DC Converter for Megahertz Wireless Power Transfer Based on A Compact Class E Current-Driven Rectifier”, IEEE International Symposium on Industrial Electronics, Jun. 19–21, 2017, Edinburgh, UK.
3. S. Yuan*, M. Liu*, Z. Tang*, **C. Ma**, “Optimal Design of Megahertz Wireless Power Transfer Systems for Biomedical Implants”, IEEE International Symposium on Industrial Electronics, Jun. 19–21, 2017, Edinburgh, UK.
4. S. Han*, H. Yin*, A. Alsabbagh*, **C. Ma**, “A Flexible Distributed Approach to Energy Management of an Isolated Microgrid”, IEEE International Symposium on Industrial Electronics, Jun. 19–21, 2017, Edinburgh, UK.
5. M. Liu*, C. Zhao*, J. Song*, **C. Ma**, “Optimal Design of a 6.78-MHz Wireless Battery Charging System Based on Average Power Loss”, the 42nd Annual Conference of the IEEE Industrial Electronics Society, Oct. 23–26, 2017, Florence, Italy.
6. C. Zhao*, H. Yin*, **C. Ma**, “Two-level Energy Management Strategy for a Fuel Cell-Battery-Ultracapacitor Hybrid System”, the 42nd Annual Conference of the IEEE Industrial Electronics Society, Oct. 23–26, 2017, Florence, Italy.
7. H. Yin*, C. Zhao*, **C. Ma**, “A Decentralized Energy Management for A Multiple Energy System with Fault Tolerance Analysis”, the 42nd Annual Conference of the IEEE Industrial Electronics Society, Oct. 23–26, 2017, Florence, Italy.
8. M. Liu*, Y. Qiao*, **C. Ma**, “Robust Optimization for a 6.78-MHz Wireless Power Transfer System with Class E Rectifier”, IEEE PELS Workshop on Emerging Technologies: Wireless Transfer, Oct. 4–6, 2016, Knoxville, TN, USA.
9. H. Yin*, C. Zhao*, M. Fu*, **C. Ma**, “A Decentralized Charging Control of A Multiple-Receiver Wireless Power Transfer System Using Ultracapacitor Semi-active Topology”, IEEE International Symposium on Industrial Electronics, Jun. 8–10, 2016, Santa Clara, CA, USA.
10. C. Zhao*, H. Yin*, Z. Yang, **C. Ma**, “Equivalent Series Resistance-based Real-time Control for a Battery-Ultracapacitor Hybrid System”, the 41st Annual Conference of the IEEE Industrial Electronics Society, Nov. 9–12, 2015, Yokohama, Japan.
11. H. Yin*, M. Fu*, C. Zhao*, **C. Ma**, “Power Distribution of a Multiple-Receiver Wireless Power Transfer System: A Game Theoretic Approach”, the 41st Annual Conference of the IEEE Industrial Electronics Society, Nov. 9–12, 2015, Yokohama, Japan.
12. Z. Tang*, M. Fu*, M. Liu*, **C. Ma**, “Optimization of the Compensation Capacitors for Megahertz Wireless Power Transfer Systems”, the 41st Annual Conference of the IEEE Industrial Electronics Society, Nov. 9–12, 2015, Yokohama, Japan.
13. C. Xiong*, Y. Xu*, F. Yu, **C. Ma**, “Torque Envelope Control for Four-Wheel-Drive Electric Vehicles”, IFAC Workshop on Engine and Powertrain Control, Simulation and Modeling, Aug. 23–26, 2015, Columbus, Ohio, USA.

14. M. Fu*, Z. Tang*, M. Liu*, **C. Ma**, X. Zhu, "Full-Bridge Rectifier Input Reactance Compensation in Megahertz Wireless Power Transfer Systems", IEEE PELS Workshop on Emerging Technologies: Wireless Power (WoW), June 5–6, 2015, Daejeon, Korea.
15. M. Liu*, M. Fu*, Z. Tang*, **C. Ma**, "A Compact Class E Rectifier for Megahertz Wireless Power Transfer", IEEE PELS Workshop on Emerging Technologies: Wireless Power (WoW), June 5–6, 2015, Daejeon, Korea.
16. S. Liu, M. Liu*, M. Fu*, **C. Ma**, X. Zhu, "A High-Efficiency Class-E Power Amplifier with Wide-Range Load in WPT Systems", IEEE Wireless Power Transfer Conference, May 13–15, 2015, Boulder, Colorado, USA.
17. C. Zhao*, H. Yin*, M. Fu*, **C. Ma**: "Analysis, Control, and Wireless Charging of Energy Systems Using Ultracapacitors", IEEE International Electric Vehicle Conference, Dec. 16-19, 2014, Florence, Italy.
18. M. Fu*, T. Zhang*, **C. Ma**, X. Zhu: "A Review of Megahertz Wireless Power Transfer Systems Based on Magnetic Resonance Coupling", 2014 International Conference of Wireless Power Transmission Technology and Application, Nov. 16, 2014, Nanjing, China (in Chinese).
19. Y. Qiao*, L. Zhou*, **C. Ma**: "Polynomial-Method-based SIMO Controller Design for A Double Inverted Pendulum", the 40th Annual Conference of the IEEE Industrial Electronics Society, Nov. 30-Dec. 1, 2014, Dallas, USA.
20. H. Yin*, C. Zhao*, Z. Yang, M. Li, **C. Ma**: "Control of A Generator-Battery-Ultracapacitor Hybrid Energy System Using Game Theory", the 40th Annual Conference of the IEEE Industrial Electronics Society, Nov. 30-Dec. 1, 2014, Dallas, USA.
21. C. Zhao*, H. Yin*, Z. Yang, **C. Ma**: "Quantitative Comparative Study of Efficiency for Battery-Ultracapacitor Hybrid Systems", the 40th Annual Conference of the IEEE Industrial Electronics Society, Nov. 30-Dec. 1, 2014, Dallas, USA.
22. C. Zhao*, H. Yin*, Y. Noguchi, **C. Ma**: "Quantitative Analysis on Energy Efficiency of A Battery-Ultracapacitor Hybrid System", The 23rd IEEE International Symposium on Industrial Electronics, June 1-4, 2014, Istanbul, Turkey.
23. M. Fu*, T. Zhang*, X. Zhu, **C. Ma**: "Subsystem-Level Efficiency Analysis of a Wireless Power Transfer System", IEEE Wireless Power Transfer Conference, May 8-9, 2014, Jeju Island, Korea.
24. T. Zhang*, M. Fu*, **C. Ma**, X. Zhu: "Optimal Load Analysis for a Two-Receiver Wireless Power Transfer System", IEEE Wireless Power Transfer Conference, May 8-9, 2014, Jeju Island, Korea.
25. H. Yin*, C. Zhao*, M. Li, **C. Ma**: "Optimization Based Energy Control for Battery/Super-capacitor Hybrid Energy Storage Systems", the 39th Annual Conference of the IEEE Industrial Electronics Society, Nov. 10-13, 2013, Vienna, Austria.
26. Y. Qiao*, L. Zhou*, **C. Ma**: "Polynomial based Inertia Ratio Controller Design for Vibration Suppression in Two Mass System", the 39th Annual Conference of the IEEE Industrial Electronics Society, Nov. 10-13, 2013, Vienna, Austria.
27. M. Fu*, T. Zhang*, X. Zhu, **C. Ma**: "A 13.56 MHz Wireless Power Transfer System without Impedance Matching Networks", IEEE Wireless Power Transfer Conference, May 15-16, 2013, Perugia, Italy.
28. **C. Ma**, Y. Qiao*, L. Zhou*: "Control of Transient Response via Polynomial Method", *The 6th IFAC Symposium on Mechatronic Systems*, April 10-12, 2013, Hangzhou, Zhejiang, China.

29. X. Liu*, M. Li, **C. Ma**, M. Xu: “Kriging Assisted On-line Torque Calculation for Brushless DC Motors Used in Electric Vehicles”, *The 21th IEEE International Symposium on Industrial Electronics*, May 28-31, 2012, Hangzhou, Zhejiang, China.
30. **C. Ma**, X. Zhu, M. Fu*: “Wireless Charging of Electric Vehicles: A Review and Experiments”, *ASME 2011 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, Aug. 28–Aug. 31, 2011, Washington D. C., USA.
31. Z. Cai*, **C. Ma**, Q. Zhao: “Acceleration-to-torque Ratio Based Anti-skid Control for Electric Vehicles”, *2010 IEEE/ASME International Conference on Mechatronic and Embedded Systems and Applications*, July 15-17, 2010, Qingdao, China.
32. **C. Ma**: “Dynamic Emulation of Tire/Road Friction for Developing Electric Vehicle Control Systems”, *ASME 2009 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, Aug. 30–Sep. 2, 2009, San Diego, USA.
33. J. Cao, **C. Ma**, H. Xie, Z. Jiang: “Nonlinear Dynamics of Duffing System with Fractional Order Damping”, *ASME 2009 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, Aug. 30–Sep. 2, 2009, San Diego, USA.
34. **C. Ma**: “Experimental Verification of Fractional Order Controller’s Robustness Using Torsion Test Bench”, *China Control and Decision Conference*, July 17–19, 2009, Guilin, China.
35. L. Xu, Q. Zhao, **C. Ma**, F. Lu: “Systematic methodology of multi-source information fusion for improving older drivers’ safety”, *IEEE 2009 Intelligent Vehicles Symposium*, June 3–5, Xi’An, China.
36. **C. Ma**, W. Li, Y. Liu, K. Yamazaki: “OMNI Interpolator for High-performance Motion Control System Part I: Algorithm of Interpolator”, *MTTRF and OMNI-CNC Annual Meeting 2007*, July 11–12, 2007, Nagano, Japan (MTTRF: Machine Tool Technologies Research Foundation).
37. **C. Ma**, Y. Hori: “An Introduction of Fractional Order Control and Its Applications in Motion Control”, *International session of The 23rd Chinese Control Conference*, Aug. 10–13, 2004, Wuxi, China.
38. **C. Ma**, Y. Hori: “The application of Fractional Order PI ^{α} D Controller for Robust Two-inertia Speed Control”, *The 4th International Power Electronics and Motion Control Conference*, Aug. 14–16, 2004, Xi’an, China.
39. **C. Ma**, Y. Hori: “Tradeoff Adjustment of Fractional Order Low-pass Filter for Vibration Suppression Control of Torsional System”, *The 1st IFAC Workshop on Fractional Differentiation and its Applications*, July 19–20, 2004, Bordeaux, France.
40. **C. Ma**, Y. Hori: “The Application of Fractional Order Control to Backlash Vibration Suppression”, *American Control Conference*, June 30–July 2, 2004, Boston, Massachusetts, USA.
41. **C. Ma**, Y. Hori: “Backlash Vibration Suppression Based on The Fractional Order Q-Filter of Disturbance Observer”, *The 8th IEEE International Workshop on Advanced Motion Control*, Mar. 25–28, 2004, Kawasaki, Japan.
42. **C. Ma**, Y. Hori: “Geometric Interpretation of Discrete Fractional Order Controllers based on Sampling Time Sampling Scaling Property and Experimental Verification of Fractional $1/s^\alpha$ Systems’ Robustness”, *ASME Design Engineering Technical Conferences & Computers and Information In Engineering Conference*, Sep. 2–6, 2003, Chicago, Illinois, USA.
43. **C. Ma**, Y. Hori: “Design of Robust Fractional Order PI ^{α} D Speed Control for Two-inertia System”, *Japan Industry Applications Society Conference*, Aug. 26-28, 2003, Tokyo, Japan.

44. **C. Ma**, Y. Hori: “Experimental evaluation of torsional system’s vibration suppression control performance by discrete fractional order controller”, *IEEEJ Technical Meeting on Industrial Instrumentation and Control*, Mar. 13, 2003, Tokyo, Japan.
45. **C. Ma**, Y. Fujii, K. Yamaji: “China’s Electric Power Options Considering Environmental Impact”, *IEEEJ Electric Power & Energy Sector Conference*, Aug. 2001, Tokyo, Japan.
46. **C. Ma**, Y. Fujii, K. Yamaji: “China’s Electric Power Sector’s Options Considering Environmental Impact Analyzed by An Optimum Energy Model”, *The 20th Conference of the Institute of Energy and Resource*, June 2001, Tokyo, Japan.
47. **C. Ma**, Y. Fujii, K. Yamaji: “The Potential Estimation of Carbon Emission Mitigation in Electric Power Sector of China”, *National Conference of the Institute of Electrical Engineers of Japan*, Mar. 2001, Nagoya, Japan.
48. **C. Ma**, Y. Fujii, K. Yamaji: “Evaluation of Applying CMD in China’s Electric Power Sector by Using Power Equipment Model”, *The 17th Energy System, Economy and Environment Conference*, Jan. 2001, Tokyo, Japan.

Patents

1. Y. Iwashita, T. Okita, H. Kawamura, **C. Ma**: “Motor Control Device”, Fanuc Limited, JP 2007-336705 (Japan)
2. Y. Iwashita, T. Okita, H. Kawamura, **C. Ma**: “Die Cushion System’s Control Device”, Fanuc Limited, JP 2007-301591 (Japan)
3. Y. Iwashita, T. Okita, H. Kawamura, **C. Ma**: “Die Cushion System’s Control Device”, Fanuc Limited, JP 2007-160356 (Japan)
4. Y. Iwashita, T. Okita, H. Kawamura, **C. Ma**: “Die Cushion System’s Control Device”, Fanuc Limited, JP 2007-125604 (Japan)
5. Y. Iwashita, T. Okita, H. Kawamura, **C. Ma**: “Device and method for controlling machine tool”, Fanuc Limited, JP 2008-186434 (Japan)
6. Y. Iwashita, T. Okita, H. Kawamura, **C. Ma**: “Motor Control Device”, Fanuc Limited, US20080001567A1 (USA), EP1868289A1 (Europe), CN101088703A (China)
7. Y. Iwashita, T. Okita, H. Kawamura, **C. Ma**: “Device and method for controlling machine tool”, Fanuc Limited, US20080164834A1 (USA), EP1944669A2 (Europe), CN101214622A (China)

Professional Activities and Services

Member, IEEE, IEEE Industrial Electronics Society, IEEE Power Electronics Society, and IEEE Control Systems Society

Vice Chair, Energy Storage Technical Committee, IEEE Industrial Electronics Society, 2016–Present.

Chair, Shanghai Chapter, IEEE Industrial Electronics Society, 2017–Present.

Associated Editor, IEEE Transactions on Industrial Informatics, 2016–Present.

Associated Editor, IEEE Industrial Electronics Technical News (ITeN), 2016–Present.

Guest Editor, Special Section on “Cyber-Physical Systems in Green Transportation”, IEEE Transactions on Industrial Informatics, 2017.

Guest Editor-In-Chief, Special Section on “Networked Energy Systems: Architectures, Communication, and Management”, IEEE Transactions on Industrial Informatics, 2015.

Guest Editor, Special Section on “Information and Control Technologies in the Electrification of Transportation”, IEEE Transactions on Industrial Informatics, 2013.

Track Chair,

1. Wireless Power Transfer Systems, IEEE International Conference on Industrial Electronics for Sustainable Energy Systems, Jan. 31–Feb. 2, 2018, Hamilton, New Zealand.
2. Energy Storage Systems, The 43th Annual Conference of the IEEE Industrial Electronics Society, Oct. 20–Nov. 1, 2017, Beijing, China.
3. Energy Storage, IEEE International Symposium on Industrial Electronics, June 8–10, 2016, Santa Clara, CA, USA.
4. Energy Storage Systems, Annual Conference of the IEEE Industrial Electronics Society, Nov. 9–12, 2015, Yokohama, Japan.

Conference Chair, The 1st Mianyang International New Energy Vehicle Technology and Development Conference, The 2nd China (Mianyang) Science and Technology City International High-Tech Expo, Oct. 15, 2014, Mianyang, Sichuan, China.

Session/Symposium Chair,

1. Session on “Resilient Renewable Energy & Storage Systems” in The 26th IEEE International Symposium on Industrial Electronics, Jun. 19–21, 2017, Edinburgh, UK.
2. Session of Oral Presentations of Papers (II), IEEE PELS Workshop on Emerging Technologies: Wireless Power, May 20–22, 2017, Chongqing, China.
3. Session on “Energy Storage and Alternative Sources-Simulation and Control” in The 42th Annual Conference of the IEEE Industrial Electronics Society, Oct. 24–27, 2016, Florence, Italy.
4. Session on “In-motion (dynamic) Wireless Charging”, IEEE PELS Workshop on Emerging Technologies: Wireless Power, Oct. 4–6, 2016, Knoxville, TN, USA.
5. Special session on “Edge-leading Solutions for Smart Cities”, IEEE International Symposium on Industrial Electronics, June 8–10, 2016, Santa Clara, CA, USA.
6. Sessions on “Modeling in Storage Systems” and “Energy Storage Systems III” in The 41th Annual Conference of the IEEE Industrial Electronics Society, Nov. 9–12, 2015, Yokohama, Japan.
7. Session on “Analytical Methods for Wireless Powers”, IEEE PELS Workshop on Emerging Technologies: Wireless Power (2015 WoW), June 5–6, 2015, Daejeon, Korea
8. Session on “Control Methodologies”, The 6th IFAC Symposium on Mechatronic Systems, Apr. 10–12, 2013, Hangzhou, Zhejiang, China.
9. Special session on “Electric Vehicular Systems”, The 21th IEEE International Symposium on Industrial Electronics, May 28–31, 2012, Hangzhou, Zhejiang, China
10. Symposium on “Mechatronics Control and Electrical Vehicular Systems”, ASME/IEEE International Conference on Mechatronic and Embedded Systems and Applications, ASME International Design Engineering Technical Conferences (IDETC) and Computers and Information in Engineering Conference (CIE), 2009, 2011, and 2013.

Academic Committee Member, Future Vehicles Forum, the 12th Annual Meeting of China Association for Science and Technology, Nov. 1–3, 2010, Fuzhou, China.

International Technical Program Committee Member, China Control and Decision Conference, July 17–19, 2009, Guilin, China.

Session Co-chair, Sensor & Sensor Fusion, The 8th IEEE International Workshop on Advanced Motion Control, Mar. 25–28, 2004, Kawasaki, Japan.

Founding Member, Subcommittee on Fractional Dynamics, ASME Multibody Systems and Nonlinear Dynamics Committee, Sep. 2–6, 2003, Chicago, Illinois, USA.

Invited Speeches (selected):

1. “Distributed Energy Management of Networked Energy Systems-Hybrid Energy Storage Systems and Micro Grids”, Forum on Frontier Technology in Transportation Electrification, Jul. 7th, 2017, Tsinghua University, Beijing, China (presented by PhD student).
2. “Design and Optimization of High Efficiency, Low Noise, and Robust Megahertz Wireless Power Transfer Systems”, ShanghaiTech Workshop on Emerging Devices, Circuits and Systems, Jul. 7th, 2017, ShanghaiTech University, Shanghai, China.
3. “System-Level Design and Optimization of Megahertz Wireless Power Transfer Systems”, Qualcomm Wireless Charging Seminar, Apr. 27th, 2017, Shenzhen, China.
4. “Modeling, Design, and Control of Hybrid Energy Systems and Wireless Power Transfer systems”, IEEE International Workshop on Design Automation for Cyber-Physical Systems, Jun. 5th, 2016, Austin, TX, USA.
5. “Fundamental Considerations and Practices on Wireless Power Transfer”, China New Energy Vehicle Forum, Apr. 22nd, 2016, Shanghai, China.
6. “Research Introduction: EV Dynamics and Energy Management”, China New Energy Vehicle Forum, May 19th, 2015, Shanghai, China.
7. “Control of Power Distribution and Wireless Charging for Energy Systems Using Ultracapacitors”, The Workshop on Energy Storage Technologies for Electrified Vehicles, IEEE International Electric Vehicle Conference, Dec. 18th, 2014, Florence, Italy.
8. “Quantitative Analysis, Control, and Wireless Charging of Energy Systems Using Ultracapacitors”, IEEE IES/CIS Local Chapter, North Carolina State University, Nov. 3rd, 2014, Raleigh, NC, USA.
9. “Modeling, Evaluation and Control of Energy Systems Using Ultracapacitors”, Annual Conference of Capacitor Forum, May 16th, 2014, Yokohama, Japan.
10. “Fundamental Considerations and Practices on Wireless Power Transfer”, Annual Conference of Capacitor Forum, Nov. 20th, 2013, Yokohama, Japan.
11. “Quantitative Studies and Control of Battery-Ultracapacitor Hybrid Systems”, 1) The 6th EDLC Industrial Technology Workshop in Korea, Sep. 25th, 2013, Seoul, Korea; 2) Samsung SDI Co., Ltd., Sep. 26th, 2013, Gyeonggi-do, Korea.
12. “Low-Order Controller Design Using Polynomial Method”, Googol Tech, Aug. 22nd, 2013, Shenzhen, Guangdong Province, China.
13. “China’s EV Development Strategy and Status of Energy Storage Industry”, The 4th International Rechargeable Battery Expo, Mar. 1st, 2013, Tokyo, Japan.
14. “On Wireless Charging of Electric Vehicles (visions and practices)”, Wireless Power World Summit, Sep. 12–13th, 2012, Shanghai, China.
15. “Fundamental Technologies for Vehicle Electrification: Considerations and Practices”, China International New Energy Vehicles Forum 2012 and 2013, Shanghai, China.

16. “On Wireless Charging of Electric Vehicles”, Chengdu Leadership Conference organized by Smart + Connected Communities Institute (an industry initiative developed in partnership with Cisco, local governments, industry players, academia, and non-governmental organizations), Apr. 28th, 2011, Chengdu, China.

Technical Paper Reviewer:

1. IEEE Transactions on Industrial Electronics
2. IEEE Transactions on Industrial Informatics
3. IEEE Transactions on Power Electronics
4. IEEE Transactions on Energy Conversion
5. IEEE Transactions on Sustainable Energy
6. IEEE Journal of Emerging and Selected Topics in Power Electronics
7. IEEE/ASME/IFAC Conferences, etc.

Others

1. The prototype Class E^2 megahertz Wireless Power Transfer System Paper was invited by AirFuel, a US-based standards organization, to be tested in Utah State University, Sep. 2017.
2. Paper, “A Game Theory Approach to Energy Management of An Engine-generator/Battery/Ultracapacitor Hybrid Energy System” published in IEEE Trans. on Industrial Electronics, was selected to appear in IEEE Industrial Electronics Technical News (ITeN), Sep. 24, 2016.
3. Paper, “Utility Function-Based Real-Time Control of A Battery-Ultracapacitor Hybrid Energy System” published in IEEE Trans. on Industrial Informatics, appeared in IEEE Industrial Electronics Technical News (ITeN) on June 4, 2015.
Link: <http://kriyeticcomics.com/iten/index.php>
4. The research on the MHz wireless charging transfer was invited to demonstrate in the 10th National Instrument Professor Day, July 15, 2014, Hangzhou, Zhejiang, China.
Link: <http://www.21ic.com/zhuangfang/jishuzhuangfang/2014-07-22/592204.html>
5. The research on the wireless charging of electric vehicles was reported by Scientific American: “Recharge and Roll: Electric Carmakers Plan to Cut the Cord”, Rachel Kaufman, Oct. 28, 2011
Link: <http://www.scientificamerican.com/article.cfm?id=wireless-electric-car-charging>

Awards

1. Shanghai Jiao Tong University “2017 Teaching and Education Nomination Award”.
Link: <http://www.sjtu.edu.cn/info/1735/70985.htm>
2. UM-SJTU Joint Institute “2016 Research Excellence Award”.
3. Shanghai Jiao Tong University “2016 Outstanding Teaching Award”.
Link: <http://www.jwc.sjtu.edu.cn/web/sjtu/198015-1980000005954.htm>
4. Shanghai Jiao Tong University “2015 Annual Excellence Award”.
5. UM-SJTU Joint Institute “2015 Research Excellence Award”,
Link: <http://umji.sjtu.edu.cn/news/ji-annual-meeting-concludes-a-successful-2015/>
6. Shanghai Jiao Tong University “2014 Koguan Top Ten Best Research Group”,
Link: <http://umji.sjtu.edu.cn/news/2015-01-29-1449/>

7. [Supervised graduate students]: SJTU Top Ten Academic Star Award (2016), National Scholarship (2015–16), SJTU Excellence scholarship (2015–16), KLA Scholarship (2016), Lixin Tang scholarship (2016), Best Presentation Recognition Award from IEEE IES IECON (2013–16), Excellent Intern Award from Intel Asia Pacific Research and Development Ltd (2014–15), etc.

Grants and Contracts

Collaborative Power Flow Control in Micro Grids, Primary Investigator, Jul. 2017–Jun. 2018, State Grid Corporation of China, China.

Magnetic Resonance-based Megahertz Wireless Power Transfer for Charging of Cellphones, Primary Investigator, May 2017–Apr. 2018, Huawei Technologies, China.

Exploration of New Applications of Ultracapacitors, Primary Investigator, Apr. 2017–Mar. 2018, Nippon Chemi-con, Japan.

A Target Vehicle for Testing of Autonomous Driving, Primary Investigator, Mar. 2017–Oct. 2017, Huawei Technologies, China.

A kHz Wireless Power Transfer System for Automotive Applications, Primary Investigator, Sep. 2016–Mar. 2017, Bosch China United Automotive Electronic Systems Co. Ltd., China.

Evaluation, Management, and Implementation of A Full-Active Battery-Ultracapacitor Hybrid Energy Storage System, Primary Investigator, Apr. 2016–Mar. 2017, Nippon Chemi-con, Japan.

Wireless Powered Cell Equalization for Battery Management Systems, Primary Investigator, Jan. 2016–May 2016, Huawei Technologies, China.

A Battery Management System for Electric Locomotives, Dec. 2015–Nov. 2016, Beijing Jiao Tong University, China.

Evaluation on the Performance Improvement of Regenerative Braking Using Super-capacitors, Primary Investigator, Apr. 2015–Mar. 2016, Nippon Chemi-con, Japan.

Load Transformation through Buck/Boost Regulator for Wireless Charging System (Power/Efficiency Coordination), Primary Investigator, Sep. 2014–Dec. 2014, Intel, USA.

Adaptive Tuning of RF Switch Mode Power Amplifiers for Wireless Charging, Co-Primary Investigator, Sep. 2014–Dec. 2014, Intel, USA.

Control of Electro-Magnetic Suspension System for Maglev Trains: Algorithm, Simulation and Test Bench, Primary Investigator, Apr. 2014–Mar. 2015, Qingdao Sifang Rolling Stock Research Institute, China

Envelope Control of Vehicle Motion Considering Human-Machine Interaction, Co-Primary Investigator, Jan. 2014–Dec. 2017, National Natural Science Foundation of China.

Collaborative Torque Control of Driving Motors for A Four-Wheel-Drive Electric Vehicle, Co-Primary Investigator, Jan. 2014–Dec. 2016, Young Scholar Research Funding, National Natural Science Foundation of China.

Electric Drive System for A Hybrid Vehicle, Co-Primary Investigator, Sep. 2013–Sep. 2014, Changan Automobile, China.

Quantitative Evaluation of the Hybridization with Ultracapacitor on Performance Degradation in Lithium-Ion Cells, Primary Investigator, Apr. 2012–Mar. 2015, Nippon Chemi-con, Japan.

Power Amplifier System Design for Wireless Charging System, Co-Primary Investigator, Oct. 2013–Dec. 2013, Intel, USA.

Evaluation and Improvement of Wireless Charging System, Primary Investigator, Apr. 2013–Sep. 2013, Intel, USA.

KW-level Demonstration System of A Wirelessly Charged Ultracapacitor Train, Primary Investigator, Apr. 2013–Dec. 2013, Beijing Jiao Tong University, China.

CAN-open Based Embedded Control System and Electric Vehicle Dynamics, Primary Investigator, Dec. 2012–May. 2013, Sponsored undergraduate research program, Shanghai Jiao Tong University, China.

Modeling and Control of Battery-Ultracapacitor Hybrid Energy Storage System for Electric Locomotives, Primary Investigator, May. 2012–Oct. 2012, Beijing Jiao Tong University, China.

Mechatronics Systems Design Course Development, Primary Investigator, 2012, Sponsored in the 3rd term of 985 project, Shanghai Jiao Tong University, China.

Modulized Design and Implementation of Electric Vehicles, Primary Investigator, Oct. 2011–Oct. 2012, Fuji Electric, Japan.

Battery Management System for Adjustable Battery Sizes, Co-Primary Investigator, Sub-project of Bosch InterCampus Program on Electromobility, Apr. 2011–Mar. 2012, Bosch, Germany.

Dynamic Battery Model for Use in Electric Vehicle Simulations, Primary Investigator, Jan. 2011–Dec. 2011, Nippon Chemi-con, Japan.

Returned Overseas Researcher Start-up Funding, Primary Investigator, Aug. 2010, Ministry of Education, China.

Technological Options for Low Cost Electric Vehicle, Primary Investigator for sub-project 1 (The-State-of-the-Art Survey on Low Cost Hardware Options) and sub-project 3 (Battery Management System), Oct. 2010–Sep. 2011, General Motors, USA.

Oversea Conference Grant, May 2009–May 2010; May 2011–May 2012, Magnolia Funding for Science and Technology Talents, Shanghai Municipal Government, China.

Modeling and Control of Flexible Systems Based on Fractional Order Control, Primary Investigator, Jan. 2010–Dec. 2012, Young Scholar Research Funding, National Natural Science Foundation of China.

Development of Alternative Energy Systems for Highly Dynamic Energy Sources and Power Demands, Co-Primary Investigator, Jan. 2010–Dec. 2010, Research Fellowship for International Young Scientists, National Natural Science Foundation of China.