Curriculum Vitae: Jimmy Chih-Hsien Peng

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Research Scope

My research tackles the challenges arising from the widespread deployment of distributed inverter-based resources at the grid-edge, and analyses the mechanisms through which prosumers affect the operation of the power distribution systems. It fills the gap between renewable integration and grid resilience. My pioneering approach to this topic is called *society-in-the-loop* analysis, where I bridge the heretofore separate fields of power engineering (including power systems and power electronics) with computational social science. My research projects are interdisciplinary, combining theoretical analysis of power systems dynamics, control synthesis of power electronic inverters, and modelling of prosumer behaviours.

Education

- Ph.D., Electrical and Electronic Engineering, University of Auckland, May, 2012.
- B.E. (1st Hons.), Electrical and Electronic Engineering, University of Auckland, Apr., 2008.

Appointments

- Associate Professor, Department of Electrical and Computer Engineering, National University of Singapore, Oct. 2022 till present.
- Assistant Professor, Department of Electrical and Computer Engineering, National University of Singapore, Jul. 2016 to Oct. 2022.
- Assistant Professor, Department of Electrical Engineering and Computer Science, Masdar Institute (now part of Khalifa University), Sep. 2012 to Jun. 2016.
- Visiting Assistant Professor, Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Jan. to Sep. 2014.
- Visiting Scientist, Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Jun. to Jul. 2013.

Honours and Awards

- Recipient, Outstanding Associate Editor, IEEE Transactions on Power Systems, Dec. 2023.
- Second Runner Up, Grand Prize, International Genetically Engineered Machine (iGEM) Competition, Nov. 2023[1].
- Recipient, Yushan Young Scholar, Ministry of Education, Taiwan, Jul. 2022.
- Recipient, Faculty Teaching Excellence Award, National University of Singapore, Apr. 2022.

[1] Co-PI leading NUS_Singapore iGEM undergraduate team.

- Runner Up, Grand Prize, International Genetically Engineered Machine (iGEM) Competition, Nov. 2021[2].
- Recipient, Best Manufacturing Project, iGEM Competition, Nov. 2021.
- Recipient, 40 under 40: Disruptors and Innovators, University of Auckland, Nov. 2020.
- Recipient, Best Paper Award, IEEE International Future Energy Electronics Conference, Nov. 2019.
- Recipient, Best Reviewer, IEEE Transactions on Smart Grid, Dec. 2019.
- Recipient, Best Foundational Advance Project, iGEM Competition, Nov. 2019.
- Recipient, Faculty Teaching Award—Commendation List, Faculty of Engineering, National University of Singapore, May 2017.
- Recipient, Best Paper Award, International Conference on Control, Robotics and Cybernetics, Aug. 2013.
- Recipient, Doctoral Scholarship, University of Auckland, Mar. 2008 to May. 2012.
- New Zealand Representative, IEC Young Professional Program, Oct. 2011.
- University of Auckland Representative, Asia-Oceania Top University League Conference, Dec. 2009.
- Recipient, Transpower New Zealand Scholarship[3] (Mar. 2005 to Apr. 2008)

Affiliations and Services

University Level

- Director, New Energy Research Centre, National University of Singapore (Chongqing) Research Institute, Sep. 2025 till present.
- Director, Master of Science Programmes, Department of Electrical and Computer Engineering, National University of Singapore, Mar. 2023 till present.
- Member, Academic Committee, Department of Electrical and Computer Engineering, National University of Singapore, Jan. 2023 till present.
- Member, Admission Committee, Department of Electrical and Computer Engineering, National University of Singapore, Jan. 2018 till present.
- Member, Social Committee, Department of Electrical and Computer Engineering, National University of Singapore, Aug. 2016 till Jul. 2025.
- Secretary, Department Management Committee, Department of Electrical and Computer Engineering, National University of Singapore, Aug. 2017 to Aug. 2018.

Professional Services

- General Chair, IEEE Asia-Pacific and Energy Engineering Conference, Singapore, Nov. 2026.
- Chair, Technical Program Committee, IEEE Transportation Electrification Conference and Expo, Asia-Pacific, Singapore, Nov. 2025.
- Member, IEEE[4] PES[5] Long-Range Planning Committee–LRP SC4, IEEE PES Governing Board, IEEE, Feb. 2023 till present.

[2] Co-PI leading NUS_Singapore iGEM undergraduate team.
[3] Employed by Transpower under the scholarship program from Mar. 2005 to May. 2012.
[4] Institute of Electrical and Electronic Engineers
[5] Power and Energy Society

- Member, Technical Program Committee, Power Systems Computation Conference, Paris, France, Jun. 2024.
- Associate Editor, IEEE Transactions on Power Systems, IEEE, Jan. 2023 till present.
- Associate Editor, IEEE Power Engineering Letters, IEEE, Jan. 2023 till present.
- Member, IEEE PES Singapore Chapter Committee, Singapore, Jan. 2023 till present.
- Chair, Technical Program Committee, IEEE PES Innovative Smart Grid Technologies, Asia Conference, Singapore, Nov. 2021.
- Member, Electrical and Electronic Standards Committee, Singapore Standards Council, Singapore, Aug. 2020 till present.
- Secretary, IEEE PES Working Group on High Performance Computing for Grid Analysis and Operation, Jul. 2014 till present.
- Member, IEC National Committee Singapore, Aug. 2020 till present.
- Secretary, IEEE PES Working Group on High Performance Computing for Grid Analysis and Operation, Jul. 2014 till present.
- Senior Member, IEEE, Apr. 2005 till present.
- Member, College of Assessor, Ministry of Business, Innovation & Employment, New Zealand, Nov. 2021 till Oct. 2023.
- Member, Working Group on Singapore Standards 535:2010, Jul. 2017—Jun. 2018.
- Member, IEC[6] National Committee New Zealand, Oct. 2011—Sep. 2012.

Research Grants

1. PI, The Interplay Between Electricity Prices and Inflation, Computational Social Science and Humanities Seed Fund Grant, 80,000 SGD, Dec. 2024—May 2026.
2. PI, Charting a roadmap for grid-forming inverters in sustainable power grids, Academic Research Fund Tier 1, Ministry of Education, 230,000 SGD, Mar. 2022—Feb. 2025.
3. PI, Data networks in cyber-physical systems, Future Resilient Systems Program, National Research Foundation, 1,500,000 SGD, Apr. 2020—Sep. 2025.
4. PI, Grid-customer integrated resilience assessment and enhancement for modern power systems, Systemic Risk and Resilience Planning Grant, National Research Foundation, 150,000 SGD, Oct. 2018—Sep. 2019.
5. PI, Design and stability analysis for community microgrid implementations, Academic Research Fund Tier 1, Ministry of Education, 150,000 SGD, Mar. 2018—Feb. 2021.
6. PI, Event-driven methods for demand response in electrical grids, National University of Singapore and Humboldt University Berlin Joint Research Program, 22,000 SGD, Nov. 2017—Oct. 2018.
7. PI, Design of future residential apartment, Academic Research Fund Tier 1, Ministry of Education, 180,000 SGD, Aug. 2016—Jul. 2019.
8. Co-PI, Design of MYSAT-1 CubeSat, Yahsat and Orbital ATK, 5,000,000 USD, Sep. 2015–Aug. 2019[7]

[6] International Electrotechnical Commission
[7] No longer involved in the CubeSat project after relocating to NUS in Jul. 2016.

9. PI, Mitigating inter-area oscillations in power systems, Massachusetts Institute of Technology and Masdar Institute Cooperative Program, 470,000 USD, Jun. 2014—May 2016.
10. Co-PI, Sustainability as a service, Masdar, 197,000 USD, Sep. 2013—Aug. 2014.

Research Supervision

- **Wei Chen**, Research Fellow, Distributed control systems using compressed communication, May 2024–present.
- **Perine Clotilde Porcher**, M.Eng. candidate, Machine learning applications in hepatology, Aug. 2025 till present.
- **Hanchen Deng**, Ph.D. candidate, Battery management for electric vehicles, Aug. 2024 till present.
- **Yutong Ji**, Ph.D. candidate (co-advisor) with Prof. Chueh Loh Poh, Machine learning for synthetic biology, Aug. 2024 till present.
- **Shiqi Li**, Ph.D. candidate, Design of fast and safe charging of Li-ion battery devices, Aug. 2023 till present.
- **Zhe Gong**, Ph.D. candidate, Operation of low-inertia renewable power systems, Aug. 2022 till present.

Graduated Ph.D. and Master Students

- **Jialun Zhang**, Ph.D. from ETH Zürich (co-advisor) with Prof. Gabriela Hug, Resilience resilience cyber-physical power systems: Planning, operations, and market design, Sep. 2025. *Currently Research Associate at Aurora Energy Research Singapore*
- **Chengrong Lin**, Ph.D. from Chongqing University (co-advisor) with Prof. Bo Hu, Security domain modeling and defense methods for power systems against composite information attacks, Jun. 2025. *Currently Postdoctoral Researcher at the Macau University*
- **Yang Yang**, Ph.D. from NUS (co-advisor) with Prof. Zhisheng Ye, Market clearing mechanisms of flexible demand resources for frequency response, Jan. 2025. *Currently Assistant Professor at the Macau University*
- **Xianfu Lin**, Ph.D. from Hunan University (co-advisor) with Prof. Wen He, Stability and control of grid-connected inverters in power grids, Jun. 2024. *Currently Assistant Professor at the Guangxi University*
- **Jingqiu Zhang**, Ph.D. from National University of Singapore, Resilient schemes against false data injection attacks in DC microgrids, Jun. 2023. *Currently Research Scientist at Huawei*
- **Andrey Gobornov**, Ph.D. from National University of Singapore, Stability of inverter-based renewables, Feb. 2023. *Currently Research Fellow at the University of Sydney*
- **Jie Mei**, Ph.D. from Massachusetts Institute of Technology, Thesis Committee (co-advisor) with Prof. James L. Kirtley, Optimal Scheduling of Multi-Energy System, May 2021.
- **Gurupraanesh Raman**, Ph.D. from National University of Singapore, Stability analysis of droop-controlled inverter-based power systems, Jul. 2021.
  Winner of Tan Ean Kiam Arts Award in 2018.
  Currently Senior Engineer at Yokogawa Electric
- **Gururaghav Raman**, Ph.D. from National University of Singapore, Weaponizing disinformation to attack critical infrastructure, Jul. 2021.
  Winner of Tan Ean Kiam Arts Award in 2018.
  Currently Senior Engineer at ION Mobility

- **Salish Maharjan**, Ph.D. from National University of Singapore (co-advisor) with Prof. Ashwin Khambadkone, Analysis and predictive control of power distribution systems with high penetration of PV resources, Jul. 2020. *Currently Research Assistant Professor at Iowa State University*
- **Colm O'Rourke**, Ph.D. from Massachusetts Institute of Technology, Thesis Committee (co-advisor) with Prof. James L. Kirtley, Decentralized power systems: reference-frame theory and stability region generation, May 2020. *Currently Senior Data Scientist at Hertz*
- **Kawsar Ali**, Ph.D. from National University of Singapore (co-advisor) with Prof. Pritam Das, High performance three-phase AC/DC converters for data centres, Jul. 2018.
  Currently Lecturer in Medical Power Electronics at the University of Oxford
- **Adedayo Aderibole**, M.Sc., Domain of stability characterization for hybrid microgrids considering different power sharing conditions, May 2017.
  Currently Senior Software Engineer at Google.
- **Maksymilian Klimontowicz**, M.Sc., Optimal sliding-mode load frequency control with high penetration of variable distributed energy resources, May 2015.
- **Abdulla Al Shammari**, M.Sc., Damping control loops for mitigating power oscillation using wind farms, May 2015.
  Currently Project Manager of Strategy & Organizational Development at Abu Dhabi Police

Past Researchers

- **Yang Yang**, Research Fellow, Social factors in community power grids, Oct. 2024–Aug. 2025.
  Assistant Professor at the Macau University since Aug. 2025.
- **Jiazuo Hou**, Research Fellow, Cyber resilience of electrical infrastructure, Apr. 2023—Dec. 2024.
  Assistant Professor at the Tonji University since May 2025.
- **Gururaghav Raman**, Research Fellow, Society-in-the-loop analysis of prosumer grids, Oct. 2020—Mar. 2023.
  Senior Software Engineer at TVS Motor Company, Singapore, since Apr. 2023.
- **Gurupraanesh Raman**, Research Fellow, Network resilience of inverter-based power distribution systems, Oct. 2020—Mar. 2023.
  Senior Electronics Engineer at Yokogawa Electric, Singapore, since Apr 2023.
- **John Soon**, Research Fellow, Fault-tolerant power converters for distributed energy resources, Apr. 2019—Jun. 2020.
  Senior Power Electronics Engineer at ION Mobility, Singapore, since Jun. 2020.
- **Subham Sahoo**, Research Fellow, Detection and mitigation of malicious attacks in microgrids, Apr. 2018—Mar. 2019.
  Associate Professor at Aalborg University, Denmark, joined as postdoctoral research since Apr. 2019.
- **Yaonan Kong**, Research Fellow, Estimation of baseline load profiles of residential households, Jun.—Dec. 2016.
  Quantitative Analyst at Investment Company of the People's Republic of China, Singapore, Dec. 2016.
- **Haris Khalid**, Research Fellow, Real-time monitoring of power oscillations using synchrophasor measurements, Aug. 2014—May 2016.
  Assistant Professor at University of Dubai, United Arab Emirates, Jun. 2016.
- **Chih-Lun Chang**, Research Engineer, Security of demand response services, Aug. 2014—Jul. 2015.
  Currently Software Engineer at Verily, United States of America.

Publications

Underlined names are graduate students and postdoctoral researchers supervised by me. The corresponding author of each journal article is denoted by * symbol.

Journal Articles

1. Y. Yang, G. R. Raman, and **J. C. -H. Peng***, Shaping residential electricity demand with negative pricing, Nature Energy, Accepted on 9 Sep. 2025.
2. J. Hou, H. Deng, P. Vorobev, and **J. C. -H. Peng***, Stability of two-terminal high-voltage direct-current power transmission systems: Nexus between parameters and controls, International Journal of Electrical Power and Energy Systems, In Press.
3. W. Chen, Z. Wang, **J. C. -H. Peng***, and G. -P. Liu, Privacy-Preserving distributed energy management for battery energy storage systems over time-varying networks, IEEE Transactions on Industrial Informatics, Early Access.
4. J. Zhang*, Z. Chu, **J. C. -H. Peng**, F. Teng, and G. Hug, Pricing framework for activation latency of fast frequency response provided by VPP, IEEE Transactions on Energy Markets, Policy and Regulation, Early Access.
5. R. Yu, X. Lin*, Y. Zhang, and **J. C. -H. Peng**, Improved synchronization capability for hybrid-synchronization-controlled VSG systems, IEEE Journal of Emerging and Selected Topics in Power Electronics, Early Access.
6. X. Xue, Y. Zhang, X. Lin*, **J. C. -H. Peng**, Novel optimization framework for energy-efficiency-based resource allocation and multi-hop offloading in blockchain-enhanced IoT, IEEE Transactions on Internet of Things, vol. 12, no. 18, pp. 36791-36806, Sep. 2025.
7. J. Hou, Y. Song, Y. Hou, and **J. C. -H. Peng**, Innate cyber-immunity and acquired cyber-immunity across multi-area power systems, IEEE Transactions on Power Systems, vol. 40, no. 5, pp. 3859-3873, Sep. 2025.
8. X. Lin, **J. C. -H. Peng**, D. Macii, D. Petri, J. Yu, and H. Wen*, Frequency-domain small-signal stability analysis methods for grid-following converters systems–An overview, Renewable and Sustainable Energy Reviews, vol. 211, Jan. 2025.
9. J. Hou, H. Deng, and **J. C. -H. Peng***, Infinitesimal-attack-high-impact Phenomena: Cyber-attack Bifurcation in Two-terminal HVDC Power Delivery Systems, IEEE Transactions on Smart Grid, vol. 16, no. 2, pp. 1775-1789, Mar. 2025.
10. S. Li, **J. C. -H. Peng***, and R. Yazami, Out-of-equilibrium Thermodynamics Analysis of Lithium-ion Batteries upon Non-linear Voltammetry Fast Charging, Journal of Power Sources, vol. 624, Dec. 2024.
11. J. Hou, H. Deng, and **J. C. -H. Peng***, A Butterfly Effect: Attack-induced Heterogeneous Equilibrium Points of High-voltage DC Systems, IEEE Transactions on Smart Grid, vol. 15, no. 6, pp. 5992-6004, Nov. 2024
12. G. R. Raman, and **J. C. -H. Peng***, Sleeping Behaviors are determined by Lockdown and not Work-from-home Arrangements, Scientific Reports, Sep. 2024.
13. J. Zhang, **J. C. -H. Peng***, and G. Hug, Wireless AMI Planning for Guaranteed Observability of Medium Voltage Distribution Grid, Applied Energy, vol. 370, Sep. 2024.
14. C. Lin, B. Hu*, C. Shao, K. Xie, and **J. C. -H. Peng**, Computation Offloading for Cloud-Edge Collaborative Virtual Power Plant Frequency Regulation Service, IEEE Transactions on Smart Grid, vol. 15, no. 5, pp. 5232-5244, Sep. 2024.
15. G. P. Raman, Y. Yang, and **J. C. -H. Peng***, The social factors shaping community microgrid operation, Nature Communications, vol. 15, no. 6451, Jul. 2024.

16. X. Lin, **J. C. -H. Peng**, Q. Li, D. Cheng, J. Yu, and H. Wen*, Power Coupling and Stability Analysis of GFM due to Rotational Frames and Control Loops Interaction, International Journal of Electrical Power and Energy Systems, vol. 157, Jun. 2024.
17. Z. Ding, Y. Li, K. Zhang, and **J. C. -H. Peng***, Two-Stage Dynamic Aggregation Involving Flexible Resource Composition and Coordination Based on Submodular Optimization, Applied Energy, vol. 360, Apr. 2024.
18. X. Lin, H. Wen*, J. Yu, J. Zhang, and **J. C. -H. Peng**, Role Determination of Impedance Coupling in GCC With DC-Link Virtual Inertia Control, IEEE Transactions on Industrial Electronics, vol. 71, no. 3, pp. 2533-2544, Mar. 2024.
19. G. P. Raman, and **J. C. -H. Peng***, Improving AC Microgrid Stability Under Cyberattacks Through Timescale Separation, IEEE Transactions on Circuits and Systems II: Express Briefs, vol. 70, no. 6, pp. 2191-2195, Jun. 2023.
20. Y. Yang, **J. C. -H. Peng***, and Z. Ye, Distributionally Robust Frequency Dynamic Constrained Unit Commitment Considering Uncertain Demand-side Resources, Applied Energy, vol. 331, Feb. 2023.
21. G. R. Raman, B. Zhao, **J. C. -H. Peng***, and M. Weidlich, Adaptive Incentive-based Demand Response with Distributed Non-Compliance Assessment, Applied Energy, vol. 326, Nov. 2022.
22. Y. Yang, **J. C. -H. Peng***, C. Ye, and Z. Ye, Optimal Reserve Allocation With Simulation-driven Frequency Dynamic Constraint: A Distributionally Robust Approach, IEEE Transactions on Circuits and Systems II: Express Briefs, vol. 29, no. 11, pp. 4483-4487, Nov. 2022.
23. Y. Yang, G. P. Raman, **J. C. -H. Peng***, and Z. Ye, Resilient Consensus-based AC Optimal Power Flow against Data Integrity Attacks Using PLC, IEEE Transactions on Smart Grid, vol. 13, no. 5, pp. 3786-3797, Sep. 2022.
24. J. Zhang*, B. She, **J. C. -H. Peng**, and F. Li, A Distributed Consensus-Based Optimal Energy Management Approach in DC Microgrids, International Journal of Electrical Power & Energy Systems, vol. 140, Sep. 2022.
25. G. P. Raman, G. R. Raman, and **J. C. -H. Peng***, Coupled Power Generators Require Stability Buffers in Addition to Inertia, Scientific Reports, vol. 11, no. 13714, Aug. 2022.
26. A. Gorbunov, **J. C. -H. Peng***, J. Bialek, and P. Vorobev, Identification of Stability Regions in Inverter-Based Microgrids, IEEE Transactions on Power Systems, vol. 37, no. 4, pp. 2613-2623, Jul. 2022.
27. G. R. Raman, G. P. Raman, and **J. C. -H. Peng***, Resilience of Urban Public Electric Vehicle Charging Infrastructure to Flooding, Nature Communications, vol. 13, no. 3213 Jun. 2022.
28. A. Gorbunov, **J. C. -H. Peng***, J. Bialek, and P. Vorobev, Can Center-of-Inertia Model be Identified from Ambient Frequency Measurements?, IEEE Transactions on Power Systems, vol. 37, no. 3, pp. 2459-2462, May 2022.
29. **J. C. -H. Peng***, G. P. Raman, J. Soon, and N. Hatziargyriou, Droop-Controlled Inverters as Educational Control Design Project, IEEE Transactions on Power Systems, vol. 37, no.2, pp. 1623-1633, Mar. 2022.
30. G. P. Raman*, C. O'Rourke, J. Lu, **J. C. -H. Peng**, and J. L. Kirtley, Conditional Generative Adversarial Networks for Dynamic Control-Parameter Selection in Power Systems, IEEE Access, Vol. 10, pp. 11236-11247, Jan. 2022.
31. Y. Yang, **J. C. -H. Peng**, C. Ye*, Z. Ye, and Y. Ding, A Criterion and Stochastic Unit Commitment towards Frequency Resilience of Power Systems, IEEE Transactions on Power Systems, vol. 37, no.1, pp. 640-652, Jan. 2022.

32. Y. Yang, **J. C. -H. Peng***, and Z. Ye, A Market Clearing Mechanism Considering Primary Frequency Response Rate, IEEE Transactions on Power Systems, vol. 36, no. 6, pp. 5952-5955, Nov. 2021.

33. G. P. Raman, and **J. C. -H. Peng***, Filter Deballasting Control of Droop-controlled Inverters, IEEE Transactions on Power Electronics, vol. 37, no. 11, pp. 13107-13117, Nov. 2021.

34. J. Soon, G. P. Raman, **J. C. -H. Peng***, and D. D. C. Lu, Current Ripple Reduction Using AC Core Biasing in DC-DC Converters, IEEE Transactions on Industrial Electronics, vol. 68, no. 10, pp. 10058-10067, Oct. 2021.

35. G. R. Raman, and **J. C. -H. Peng***, Electricity Consumption of Singaporean Households Reveals Proactive Community Response to COVID-19 Progression, Proceedings of the National Academy of Sciences, vol. 118, no. 34, pp. e2026596118, Aug. 2021.

36. J. Zhang, S. Sahoo, **J. C. -H. Peng***, and F. Blaabjerg, Mitigating Concurrent False Data Injection Attacks in Cooperative DC Microgrids, IEEE Transactions on Power Electronics, vol. 36, no. 8, pp. 9637-9647, Aug. 2021.

37. S. Sahoo, and **J. C. -H. Peng***, A Localized Event Driven Resilient Mechanism for Cooperative Microgrid Against Data Integrity Attacks, IEEE Transactions on Cybernetics, vol. 51, no. 7, pp. 3687-3698, Jul. 2021.

38. M. Waniek, G. R. Raman, B. AlShebli, **J. C. -H. Peng***, and T. Rahwan*, Traffic Networks are Vulnerable to Disinformation Attacks, Scientific Reports, vol. 11, no. 5329, Mar. 2021.

39. Z. Qiu, **J. C. -H. Peng**, H. Yang*, and D. Srinivasan, Modeling and Analysis of Inner controls Effects on Damping and Synchronizing Torque Components in VSG-controlled Converter, IEEE Transactions on Energy Conversion, vol. 36, no. 1, pp. 488-499, Mar. 2021.

40. S. Maharjan*, A. Khambadkone, and **J. C. -H. Peng**, Robust Constrained Model Predictive Voltage Control in Active Distribution Networks, IEEE Transactions on Sustainable Energy, vol. 12, no. 1, pp. 400-411, Jan. 2021.

41. A. Gorbunov, **J. C. -H. Peng***, and P. Vorobev, Identification of Critical Clusters in Inverter-based Microgrids, Electric Power Systems Research, vol. 189, Dec. 2020.

42. H. M. Khalid*, and **J. C. -H. Peng**, Bidirectional Charging in V2G Systems: An In-Cell Variation Analysis of Vehicle Batteries, IEEE Systems Journal, vol. 14, no. 3, pp. 3665-3675, Sep. 2020.

43. J. Soon, D. D. C. Lu, **J. C. -H. Peng***, and W. Xiao, Reconfigurable Nonisolated DC-DC Converter with Fault-Tolerant Capability for High Reliability, IEEE Transactions on Power Electronics, vol.35, no.9, pp. 8934-8943, Sep. 2020.

44. G. R. Raman, B. AlShebli, M. Waniek, T. Rahwan*, and **J. C. -H. Peng***, How Weaponizing Disinformation Can Bring Down a Citys Power Grid, PLOS ONE, vol. 15, no. 8, pp. e0236517, Aug. 2020. *Featured in PLOS ONE's top read. Top 1% of all research outputs ever tracked by Altmetric reported in Jan. 2021.*

45. S. Sahoo, **J. C. -H. Peng***, D. Annavaram, S. Mishra, and T. Dragicevic, On Detection of False Data in Cooperative DC Microgrids-A Discordant Element Approach, IEEE Transactions on Industrial Electronics, vol. 67, no. 8, pp. 6562-6571, Aug. 2020.

46. G. P. Raman, **J. C. -H. Peng***, and H. Zeineldin, Optimal Damping Recovery Scheme for Droop-controlled Inverter-based Microgrids, IEEE Transactions on Smart Grid, vol.11, no. 4, pp. 2805-2815, Jul. 2020.

47. S. Sahoo, **J. C. -H. Peng***, S. Mishra, and T. Dragicevic, Distributed Screening of Hijacking Attacks in DC Microgrids, IEEE Transactions on Power Electronics, vol. 35, no. 7, pp. 7574-7582, Jul. 2020.

48. S. Maharjan*, A. Khambadkone, and **J. C. -H. Peng**, Enhanced Z-bus Method for Analytical Computation of Voltage Sensitivities in Distribution Networks, IET Generation, Transmission & Distribution, vol. 14, no. 16, pp. 31873197, Jun. 2020.
49. H. M. Khalid*, S. Muyeen, and **J. C. -H. Peng**, Cyber-attacks in a Looped Energy-Water Nexus: An Inoculated Sub-observer-Based Approach, IEEE Systems Journal, vol.14, no. 2, pp. 2054-2065, Jun. 2020.
50. G. P. Raman, and **J. C. -H. Peng***, Mitigating Stability Issues due to Line Dynamics in Droop-Controlled multi-Inverter Systems, IEEE Transactions on Power Systems, vol. 35, no. 3, pp. 2082-2092, May 2020.
51. K. Ali*, S. Dube, P. Das, **J. C. -H. Peng**, and D. Rogers, Improvement of ZVS Range and Current Quality of the Nine-Switch Single-Stage AC-DC Converter, IEEE Transactions on Power Electronics, vol.5, no.35, pp. 4658-4668, May 2020.
52. G. R. Raman, **J. C. -H. Peng***, and T. Rahwan, Manipulating Residents' Behavior to Attack the Urban Power Distribution System, IEEE Transactions on Industrial Informatics, vol.15, no.10, pp. 5575-5587, Oct. 2019.
53. S. Sahoo, S. Mishra, **J. C. -H. Peng***, and T. Dragicevic, A Stealth Cyber Attack Detection Strategy for DC Microgrids, IEEE Transactions on Power Electronics, vol.34, no.8, pp. 8162-8174, Aug. 2019.
54. C. L. Chang, and **J. C. -H. Peng***, A Decision-Making Auction Algorithm for Demand Response in Microgrids, IEEE Transactions on Smart Grid, vol.9, no.4, pp. 3553-3562, Jul. 2018.
55. G. R. Raman, Y. Kong, **J. C. -H. Peng***, and Z. Ye, Demand Baseline Estimation using Similarity-based technique for Tropical and Wet Climates, IET Generation, Transmission & Distribution journal, vol.12, no.13, pp. 3296-3304, May 2018.
56. A. Adedayo, H. Zeineldin, M. El Moursi, **J. C. -H. Peng**, and M. Al Hosani*, Domain of Stability Characterization for Hybrid Microgrids Considering Different Power Sharing Conditions, IEEE Transactions on Energy Conversion, vol.33, no.1, pp. 312-323, Mar. 2018.
57. H. M. Khalid, and **J. C. -H. Peng***, Immunity Toward Data-Injection Attacks Using Multisensor Track Fusion-Based Model Prediction, IEEE Transactions on Smart Grid, vol.8, no.2, pp.697-707, Mar. 2017.
58. S. Mahajan, **J. C. -H. Peng***, J. Elizondo Martinez, W. Xiao, P. H. Huang, and J. L. Kirtley, Improved Sample Value Adjustment for Synchrophasor Estimation at Off-Nominal Power System Conditions, IEEE Transactions on Power Delivery, vol.32, no.1, pp.33-44, Feb. 2017.
59. H. R. Chamorro*, C. A. Ordonez, **J. C. -H. Peng**, and M. Ghandhari, Non-Synchronous Generation Impact on Power System Coherency, IET Generation, Transmission & Distribution, vol.10, no. 10, pp. 2443-2453, Jul. 2016.
60. H. M. Khalid, and **J. C. -H. Peng***, A Bayesian Algorithm to Enhance the Resilience of WAMS Applications Against Cyber Attacks, IEEE Transactions on Smart Grid, vol.7, no.4, pp. 2026-2037, Jul. 2016.
61. H. M. Khalid, and **J. C. -H. Peng***, Tracking Electromechanical Oscillations: An Enhanced Maximum-Likelihood Based Approach, IEEE Transactions on Power Systems, vol. 31, no.3, 1799-1808, May 2016.
62. P. H. Huang*, W. Xiao, **J. C. -H. Peng**, and J. L. Kirtley, Comprehensive Parameterization of Solar Cell: Improved Accuracy with Simulation Efficiency, IEEE Transactions on Industrial Electronics, vol. 63, no. 3, pp. 1549-1560, Mar. 2016.
63. M. Klimontowicz, A. Al-Hinai*, and **J. C. -H. Peng**, Optimal LFC SMC for three–Area power system with high penetration of PV, Journal of Electric Systems, vol. 12, no. 1, pp. 68-84, Mar.

2016.

64. H. M. Khalid, Q. Ahmed, **J. C. -H. Peng***, and G. Rizzoni, Current-Split Estimation in Li-Ion Battery Pack: An Enhanced Weighted Recursive Filter Method, IEEE Transactions on Transportation Electrification, vol. 1, no. 4, pp. 402-412, Dec. 2015.
65. H. M. Khalid, Q. Ahmed, and **J. C. -H. Peng***, Health Monitoring of Li-Ion Battery Systems: A Median Expectation-based Diagnosis Approach (MEDA), IEEE Transactions on Transportation Electrification, vol. 1, no. 1, pp. 94-105, Jun. 2015.
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2. **J. C. -H. Peng**, Society-in-the-loop Analysis of the Electricity Grid, Singapore-ETH Centre, Singapore, 6 June 2023.
3. **J. C. -H. Peng**, Assessing COVID-19 response using household electricity data, ETH Risk Center, ETH Zurich, Switzerland, November 2021.
4. **J. C. -H. Peng**, Building Grid Resilience with Inverter-based Resources and Prosumer Behavior, National Taiwan University, November 2021.
5. **J. C. -H. Peng**, W. Xiao, and Q. Han, A MATLAB/Simulink Approach of Photovoltaic Power Systems: Designing, Modeling, Simulation, and Control, Tutorial Session, IEEE Energy Conversion Congress and Exposition (ECCE), Vancouver, British Columbia, Canada, October 2021.
6. **J. C. -H. Peng**, Resilience in Cyber-Physical Systems, APRU Multi-Hazards Summer Lecture Series: Creating a Resilient Society Against Multiple Hazards, Tohoku University, Japan, August 2021.
7. **J. C. -H. Peng**, Weaponizing Disinformation to Attack Critical Infrastructure, IEEE Young Professional Affinity Group, Denmark, March 2021.

8. **J. C. -H. Peng** Global Renewable Power Generation Scenario and Challenges in Microgrids, National Institute of Technology Silchar, Assam, India, September 2020.
9. **J. C. -H. Peng**, From Engineering to Synthetic Biology, iGEM LifeHack Workshop, Singapore, February 2019.
10. **J. C. -H. Peng**, Facilitating Reliable Future Energy Trading for United Arab Emirates, National University of Singapore, Singapore, November 2015.
11. **J. C. -H. Peng**, Enhancing Situational Awareness in Electrical Power Infrastructures, Center for Automotive Research, Ohio State University, Columbus, Ohio, August 2015.
12. **J. C. -H. Peng**, Applications using Phasor Measurement Units, ABB Middle East User Group Meeting, Abu Dhabi, United Arab Emirates (UAE), May 2015.
13. **J. C. -H. Peng**, Moving Forward: Integration of Wide-Area Monitoring Systems, ABB Corporate Research Center, Vasteras, Sweden, March 2015.
14. **J. C. -H. Peng**, Interconnecting our World: Monitoring Inter-Area Oscillations in GCC Interconnection, KTH Royal Institute of Technology, Stockholm, Sweden, March 2015.
15. **J. C. -H. Peng**, Smarter Grid: Enhancing Power System Security, Ventyx, Abu Dhabi, UAE, November 2014.
16. **J. C. -H. Peng**, Renewable Integration: Challenges and Projections, Harvard Project for Asian and International Relations Conference, Dubai, UAE, November 2013.
17. **J. C. -H. Peng**, Monitoring System Dynamics in the Middle Eastern Power Grids, Center for Ultra-Wide-Area Resilient Electric Energy Transmission Networks (CURENT), Rensselaer Polytechnic Institute, Troy, New York, July 2013.
18. **J. C. -H. Peng**, Transmission Tomorrow: New Zealand Synchrophasor Development, University of Canterbury, Christchurch, New Zealand, May 2012.

Conference Papers

1. S. Li, and **J. C. -H. Peng**, Battery state-of-health estimation for autonomous aerial vehicles using features from constant-power cruise phase, Asia Conference on Power and Electrical Engineering (ACPEE), Apr. 2025. *Awarded the best track paper.*
2. J. Zhang, **J. C. -H. Peng**, and G. Hug, Review on resilience enhancement techniques in cyber physical distribution system, Australasian Universities Power Engineering Conference, Nov. 2024.
3. Z. Gong, and **J. C. -H. Peng**, Surviving the blackout: A review of household electricity-dependent patients under power failures, Australasian Universities Power Engineering Conference, Nov. 2024.
4. J. Zhang, G. P. Raman, G. R. Raman, **J. C. -H. Peng**, and W. Xiao, A Resilient Scheme for Mitigating False Data Injection Attacks in Distributed DC Microgrids, IEEE Energy Conversion Congress and Exposition (ECCE), Oct. 2021.
5. H. Li, W. Xiao, S. Li, and **J. C. -H. Peng**, Enhanced Modulation Technique for Power Quality Improvement of LED Drivers, IEEE Energy Conversion Congress and Exposition (ECCE), Oct. 2021.
6. Q. Zhang, G. R. Raman, and **J. C. -H. Peng**, EV Charging Optimization based on Day-ahead Pricing Incorporating Consumer Behavior, IEEE Region 10 Conference, Nov. 2020.
7. J. Zhang, and **J. C. -H. Peng**, and J. Y. Siu, A Novel Design of Concurrent Cyber Attacks in Cooperative DC Microgrids, IEEE Power and Energy Society Transmission & Distribution Exposition, Oct. 2020.

8. G. P. Raman, X. Cao, A. Li, J. Lu, G. R. Raman, and **J. C. -H. Peng**, cGANs-based Real-time Stability Region Determination for Inverter-based Systems, IEEE Power and Energy Society General Meeting, Aug. 2020.
9. K. Ali, G. P. Raman, **J. C. -H. Peng**, and W. Xiao, A GaN-based High Step-Up Half-Bridge Resonant Converter for Interfacing PV modules to DC Data Centers, IEEE International Future Energy Electronics Conference, Nov. 2019.
10. G. P. Raman, and **J. C. -H. Peng**, and S. Venkatachari, On the Effect of Line Dynamics in Multi-inverter Systems with Generalized Droop Control, IEEE Energy Conversion Congress and Exposition (ECCE), Sep. 2019.
11. G. R. Raman, B. Zhao, **J. C. -H. Peng**, and M. Weidlich, Dynamic Decision Making for Demand Response through Adaptive Event Stream Monitoring, IEEE Power and Energy Society General Meeting, Aug. 2019.
12. R. Rana, S. Sahoo, S. Mishra, and **J. C. -H. Peng**, Performance Validation of Cooperative Secondary Controllers in Autonomous AC Microgrids under Communication Delays, IEEE Power and Energy Society General Meeting, Aug. 2019.
13. S. Maharjan, A. M. Khambadkone, and **J. C. -H. Peng**, Integration of Centralized and Local Voltage Control Scheme in Distribution Network to Reduce the Operation of Mechanically Switched Devices, IEEE PowerTech Conference, Jun. 2019.
14. S. Sahoo, **J. C. -H. Peng**, S. Mishra, T. Dragicevic, A Local Voting Protocol Based Cooperative DC Community Microgrids, IEEE 3rd International Conference on DC Microgrids (ICDCM), May 2019.
15. G. R. Raman, and **J. C. -H. Peng**, A Hybrid Customer Baseline Load Estimator for Small and Medium Enterprises, 44th Annual Conference of the IEEE Industrial Electronics Society (IECON), Oct. 2018.
16. G. P. Raman, H. X. Chiang, K. Ali, and **J. C. -H. Peng**, Impact of Supervisory Control Inputs in Multi-Inverter Distribution Systems, 44th Annual Conference of the IEEE Industrial Electronics Society (IECON), Oct. 2018.
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