Ningyi DAI 戴寧怡
Associate Professor
Assistant Dean (Administrative Affairs), FST

Academic Qualifications

- Ph.D in Department of Electrical and Electronics Engineering, Faculty of Science and Technology, University of Macau, Macao, China (2007)
- M.Sc in Department of Electrical and Electronics Engineering, Faculty of Science and Technology, University of Macau, Macao, China (2004)
- BS, in Department of Electrical Engineering, Southeast University, Nanjing, China (2001)

Professional Experience

- 06/2018 – Present: Assistant Dean (Administrative Affairs), University of Macau, China
- 08/2016 – Present: Associate Professor, University of Macau, China
- 01/2018 – 05/2018: Visiting Fellow, University of New South Wales, Sydney, Australia
- 09/2009 – 08/2016: Assistant Professor, University of Macau, China
- 10/2007 – 08/2009: Post-doctoral Research Fellow, University of Macau, China

Professional Affiliations

- Senior Member of The Institute of Electrical and Electronics Engineers (IEEE)

Research

Research Projects

- **Principal Investigator:** "Research and Application of Digital Twin Equipment for High-Reliability Green Power Grid in Smart Cities ", Science and Technology Development Fund, Macao, China, (0029/2022/AMJ 2024-2026)
- **Principal Investigator:** "Research on Key Technologies and Equipment for Compact, High-efficient and Environmental-friendly Flexible Distribution System in Smart City", Science and Technology Development Fund, Macao, China, (0029/2022/AMJ 2022–2024)
- **Yonghua Song (PI), Ningyi Dai (sub-task PI), Hongcai Zhang (sub-task PI), and Keng Weng Lao (sub-task PI), "**Intelligent Coordinated Operation, Protection and Application on Integrated Energy IoT," Science and Technology Development Fund, Macao, China, 2021-2024.
- **Principal Investigator:** Research on High-performance Low-cost Model Predictive Control for Modular Multilevel Converters, Level I project supported by RC UM, 2023-2025
- **Principal Investigator:** 城市-能源-建筑"智慧物联下的数字孪生刻画及跨空间多任务协同响应技术的创新研究与平台应用，四川省港澳台科技创新合作项目，2020.01-2021.12

- **Principal Investigator**: Power Quality Analysis and Control for Distribution Network with High Photovoltaic (PV) Penetration, Level I project supported by RC UM, 2020 ~ 2021
- **Principal Investigator**: Study Hierarchical Control in a Networked Microgrid Consisting of Inductive-coupling Inverters and Capacitive-coupling Inverters, Level II project supported by RC UM, 2019 ~ 2021
- **Principal Investigator**: Development of a robust controller for the capacitive-coupling voltage source inverter**,** Level II project supported by RC UM, 2015 ~ 2018
- **Principal Investigator**: High-voltage motor drive based on Modular Multilevel Converters (MMCs), Level III project supported by RC UM, June 2014 ~ May 2017
- **Principal Investigator**: Application of capacitive-coupling inverter to integrate photovoltaic (PV) generation system, supported by FDCT&RC UM, June 2013 ~ May 2016
- **Principal Investigator**: One-for-all socket for power quality conditioning and energy saving, Level II project supported by RC UM, June 2011 ~ Aug. 2014. Completed.
- Co-Principle Investigator: A novel electric traction power supply system based on unified power quality compensators in high power applications, supported by FDCT & RC UM, , 2009~2013
- Member: Integrated Generalized PWM controller for DC-AC Inverter, supported by FDCT & RC UM, 2010~2014

Award

- 澳門科學技術獎 – 自然科學獎 二等獎（2022）

  城市綜合能源系統運行優化與供能質量治理理論及方法; 宋永華, 黃民聰, 張洪財, 戴寧怡, 劉景榮
- 澳門科學技術獎---技術發明獎---二等獎 (2018)

  自適應混合型耦合逆變器拓撲在不同電能系統中的應用; 黃民聰, 戴寧怡, 林智聲
- 澳門科學技術獎---技術發明獎---三等獎 (2012)

  三維脈宽調制技術及其在三相四線制有源濾波器中的應用; 黃民聡, 戴宁怡, 陆耀强

- 专著

1. Man-Chung Wong, **Ning-Yi Dai,** Chi-Seng Lam*, "*Parallel Power Electronics Filters in Three-Phase Four-Wire Systems - Principle, Control and Implementation", Springer, 2016.
2. Keng-Weng Lao, Man-Chung Wong*,* **Ning-Yi Dai**, "Co-Phase Traction Power Supply with Railway Hybrid Power Quality Conditioner", Springer, published in 2018.

- 科研项目

- **Principal Investigator:** “Research and Application of Digital Twin Equipment for High-Reliability Green Power Grid in Smart Cities”, Science and Technology Development Fund, Macao, China, (0029/2022/AMJ 2024–2026)
- **Principal Investigator:** “Research on Key Technologies and Equipment for Compact, High-efficient and Environmental-friendly Flexible Distribution System in Smart City”, Science and Technology Development Fund, Macao, China, (0029/2022/AMJ 2022–2024)
- **Yonghua Song (PI), Ningyi Dai (sub-task PI), Hongcai Zhang (sub-task PI), and Keng Weng Lao (sub-task PI), “**Intelligent Coordinated Operation, Protection and Application on Integrated Energy IoT,” Science and Technology Development Fund, Macao, China, 2021-2024.
- **Principal Investigator:** Research on High-performance Low-cost Model Predictive Control for Modular Multilevel Converters, Level I project supported by RC UM, 2023-2025
- **Principal Investigator:** Study Hierarchical Control in a Networked Microgrid Consisting of Inductive-coupling Inverters and Capacitive-coupling Inverters, Level II project supported by RC UM, 2019 ~ 2021
- **Principal Investigator**: Power Quality Analysis and Control for Distribution Network with High Photovoltaic (PV) Penetration, Level I project supported by RC UM, 2020 ~ 2021
- **Principal Investigator**: Study Hierarchical Control in a Networked Microgrid Consisting of Inductive-coupling Inverters and Capacitive-coupling Inverters, Level II project supported by RC UM, 2019 ~ 2021
- **Principal Investigator**: Development of a robust controller for the capacitive-coupling voltage source inverter**,** Level II project supported by RC UM, 2015 ~ 2018
- **Principal Investigator**: High-voltage motor drive based on Modular Multilevel Converters (MMCs), Level III project supported by RC UM, June 2014 ~ May 2017
- **Principal Investigator**: Application of capacitive-coupling inverter to integrate photovoltaic (PV) generation system, supported by FDCT&RC UM, June 2013 ~ May 2016
- **Principal Investigator**: One-for-all socket for power quality conditioning and energy saving, Level II project supported by RC UM, June 2011 ~ Aug. 2014. Completed.
- Co-Principle Investigator: A novel electric traction power supply system based on unified power quality compensators in high power applications, supported by FDCT & RC UM, , 2009~2013
- Member: Integrated Generalized PWM controller for DC-AC Inverter, supported by FDCT & RC UM, 2010~2014

- 近五年期刊论文

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- 近五年会议论文

[1] P. Wang, Z. Zhang, N. Dai, J. Ren and W. -J. Lee, “A Full Parameter identification Approach for Dynamic Equivalent Modeling of Wind Farm,” 2025 IEEE/IAS 61st Industrial and Commercial Power Systems Technical Conference (I&CPS), Montreal, QC, Canada, 2025, pp. 1-9, doi: 10.1109/ICPS64254.2025.11030338.

[2] H. Wei, D. Huang, J. Zhu, X. Cheng, Y. Chen and N. Dai, “Efficient Control Parameters Optimization for Grid-Connected Converter via Data-Driven Surrogate Model,” 2025 10th Asia Conference on Power and Electrical Engineering (ACPEE), Beijing, China, 2025, pp. 219-224, doi: 10.1109/ACPEE64358.2025.11041056.

[3] Z. Zhou and N. Y. Dai, "Enhancing Simulation Precision of Modular Multilevel Converters Through Hardware-Informed Digital Twin," *2024 CPSS & IEEE International Symposium on Energy Storage and Conversion (ISESC)*, Xi'an, China, 2024, pp. 1120-1124, doi: 10.1109/ISESC63657.2024.10785425.

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[6] R. Wang, Q. Hou, N. Dai and P. Wang, "Optimal Placement of Phasor Measurement Unit in Active Distribution Network considering Uncertainty and Soft Open Point," *2023 IEEE 4th China International Youth Conference On Electrical Engineering (CIYCEE)*, Chengdu, China, 2023, pp. 1-6, doi: 10.1109/CIYCEE59789.2023.10401538.

[7] X. Jin, N. Dai and Y. Huang, "μ Approach-Based Robust Stability Analysis of Weak-Grid-Connected Voltage Source Converter," *2023 IEEE 2nd International Power Electronics and Application Symposium (PEAS)*, Guangzhou, China, 2023, pp. 214-219, doi: 10.1109/PEAS58692.2023.10395883.

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Controlled Loads as Virtual Power Plant Considering Signal Noises," *2023 IEEE 6th International Electrical and Energy Conference (CIEEC)*, Hefei, China, 2023, pp. 1474-1478, doi: 10.1109/CIEEC58067.2023.10167103.

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