Mingyuan JIANG 江明远

Research Assistant Professor
Department of Electrical and Electronic Engineering
The Hong Kong Polytechnic University

Tel: +852 2766 6174
Email: m.y.jiang@polyu.edu.hk
Personal website: jiangmy97.github.io

RESEARCH INTERESTS

- **Electric machine**
  - Advanced machine design: EV machines, Robotic actuators, Multiport machines, Flux modulated machines
  - Machine optimization
  - Machine control
  - AI in electric machine design
- **Autonomous driving system**
  - Localization and mapping
  - Sensor fusion

PROFESSIONAL EXPERIENCE

06/2024 - Present	**Research Assistant Professor** The Hong Kong Polytechnic University (PolyU)

EDUCATION

09/2021 - 05/2024	**Ph.D. in Electrical Engineering** The Hong Kong Polytechnic University (PolyU)
09/2020 - 06/2021	**M.Sc. in Electrical Engineering** The Hong Kong Polytechnic University (PolyU)
09/2016 - 06/2020	**B.Eng. in Electrical Engineering and Automation** Shanghai Maritime University (SMU)

RESEARCH GRANTS

- PI, 08/2024-08/2026, PolyU Start-up Fund (1-BDW7), “Development of the High-Order Harmonic Modulation Based Multiport Machine Systems”, HKD 300,000.
- Co-I, 12/2024-06/2026, Innovation and Technology Fund (ITP/043/24AP), “Development of Fault Self-Recovery Axial Direct-Drive Hub Motor for AGV”, HKD 1,740,000.

PUBLICATIONS

Journal Paper:

[1] **M. Jiang** and S. Niu, “A High-Order Harmonic Compound Rotor Based Brushless Dual-Electrical-Port Dual-Mechanical-Port Machine,” in *IEEE Transactions on Industrial Electronics*, vol. 71, no. 6, pp. 5463-5473, June 2024, doi: 10.1109/TIE.2023.3294574.

[2] **M. Jiang** and S. Niu, “Overview of Dual Mechanical Port Machines in Transportation Electrification,” in *IEEE Transactions on Transportation Electrification*, doi: 10.1109/TTE.2023.3324948.

[3] **M. Jiang**, S. Niu and C. C. Chan, "A High-Order-Harmonic Compound-Rotor Based Brushless Doubly-Fed Machine for Variable Speed Constant Frequency Wind Power Generation," in *IEEE Journal of Emerging and Selected Topics in Power Electronics*, doi: 10.1109/JESTPE.2024.3407242.

[4] **M. Jiang,** W. Fu and S. Niu, “Design and Analysis of a Novel Dual-Airgap Dual Permanent Magnet Vernier Machine,” in *IEEE Access*, vol. 9, pp. 57188-57197, 2021, doi: 10.1109/ACCESS.2021.3072918.

[5] **M. Jiang**, K. Zhao, W. Wang, and S. Niu, “A Novel Brushless PM-Assisted DC Motor with Compound-Excited Circular Winding,” *Sustainability*, vol. 15, no. 18, p. 13924, Sep. 2023, doi: 10.3390/su151813924.

[6] **M. Jiang** and S. Niu, “Novel Mechanical Flux-Weakening Design of a Spoke-Type Permanent Magnet Generator for Stand-Alone Power Supply,” *Applied Sciences*, vol. 13, no. 4, p. 2689, Feb. 2023, doi: 10.3390/app13042689.

[7] **M. Jiang** and S. Niu, “A Novel Consequent-Pole Contra-Rotating Machine With Zero-Sequence Current Excitation,” in *IEEE Transactions on Magnetics*, vol. 59, no. 11, pp. 1-5, Nov. 2023, Art no. 8101405, doi: 10.1109/TMAG.2023.3272952.

[8] W. Wang, S. Niu, X. Zhao, **M. Jiang** and W. Fu, “A Novel Saturated Differential Inductance-based Position Estimation and Sensorless Startup Control of Non-salient DC Vernier Reluctance Machine,” in *IEEE Transactions on Energy Conversion*, doi: 10.1109/TEC.2023.3339188.

[9] C. Huang, L. Xiong, Y. Gong, **M. Jiang** and S. Niu, "Tangential Electromagnetic Force Array on the Vibration and Noise of Electric Axle for New Energy Vehicle," in *IEEE Access*, vol. 11, pp. 100001-100009, 2023, doi: 10.1109/ACCESS.2023.3314758.

[10] Z. Dong, **M. Jiang**, S. Niu and K. T. Chau, "Overview of Permanent Magnet Wind Power Generators," in *IEEE Transactions on Magnetics*, doi: 10.1109/TMAG.2025.3546725. (Invited paper)

[11] Z. Dong, **M. Jiang**, S. Niu and K. T. Chau, "Mechanical Flux-Weakening Design of the Bidirectional Flux-Modulated Radial Permanent Magnet Generator for Wind Power Generation," in IEEE Transactions on Magnetics, doi: 10.1109/TMAG.2025.3531139.

[12] W. Wu, **M. Jiang** and S. Niu, "Design and Analysis of a Pole-changing Machine with Multi-auxiliary-teeth Structure," in *IEEE Transactions on Magnetics*, doi: 10.1109/TMAG.2025.3540266.

[13] W. Wu, **M. Jiang** and S. Niu, "Synergetic Optimization Based on Doubly Salient Pole-changing Machine for Torque Ripple Reduction," in IEEE Transactions on Magnetics, doi: 10.1109/TMAG.2025.3540271.

Conference Paper:

[1] Z. Dong, **M. Jiang** and S. Niu, "Novel Radial-Type Permanent Magnet Generators with Mechanical Flux-Weakening Design for VSCAV Control in Wind Power Generation," *2024 IEEE International Conference on Electrical Energy Conversion Systems and Control (IEECSC)*, Shanghai, China, 2024, pp. 62-66, doi: 10.1109/IEECSC62814.2024.10913806. (Best paper)

[2] **M. Jiang**, S. Niu and W. Wu, "Design and Analysis of a Novel Dual-Rotor Transverse Flux Permanent Magnet Machine," *IECON 2023- 49th Annual Conference of the IEEE Industrial Electronics Society*, Singapore, Singapore, 2023, pp. 1-6, doi: 10.1109/IECON51785.2023.10311826.

[3] W. Wu, S. Niu and **M. Jiang**, "Design of a Novel Dual-Rotor Permanent Magnet Multiport Machine with C-Type Stator," *IECON 2023- 49th Annual Conference of the IEEE Industrial Electronics Society*, Singapore, Singapore, 2023, pp. 1-6, doi: 10.1109/IECON51785.2023.10312670.

[4] W. Wu, S. Niu, **M. Jiang** and Y. Wang, "Flux-Weakening Capability Enhancement of a Zero-Sequence Current Excitation Based Pole-Changing Permanent Magnet Machine," *2023 26th International Conference on Electrical Machines and Systems (ICEMS)*, Zhuhai, China, 2023, pp. 2739-2743, doi: 10.1109/ICEMS59686.2023.10344530.

[5] W. Wu, S. Niu, **M. Jiang** and Y. Wang, "Design and Optimization of a Novel Flux Reversal Permanent Magnet Machine with DC Excitation Source," *2023 26th International Conference on Electrical Machines and Systems (ICEMS)*, Zhuhai, China, 2023, pp. 2765-2769, doi: 10.1109/ICEMS59686.2023.10344545.

SELECTED ACHIEVMENTS

- Invited talk at Joint MMM-Intermag Conference in New Orleans, LA, USA, 2025.
- IEECSC Best Paper Award, 2024.
- Invited talk at the 25th Youth Salon of China Electrotechnical Society (中国电工技术学会第二十五期青年沙龙) at HKUST (GZ), 2024.
- Award of Outstanding Performance in TPS Teaching, PolyU, 2022.

TEACHING

EE4003/EE4003A	Electrical Machines
EE502	Modern Protection Methods
EE590	EE Dissertation (MSc in EE/EV)
EE Undergraduate	Final Year Project

SERVICES

Invited Reviewer:

- *IEEE Transactions on Industrial Electronics (TIE)*
- *IEEE Transactions on Transportation Electrification (TTE)*
- *IEEE Journal of Emerging and Selected Topics in Power Electronics (JESTPE)*
- *IEEE Transactions on Energy Conversion (TEC)*
- *IEEE Transactions on Magnetics (TMAG)*
- *IEEE Access*