華中科技大學
HUAZHONG UNIVERSITY OF SCIENCE AND TECHNOLOGY

Mingyang BAO

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Education Background

Huazhong University of Science and Technology(HUST) 2021 Sep. - 2025 Jun.

▲ **Bachelor of Engineering** **GPA:** 85.4/100
College: School of Electrical and Electronic Engineering(SEEE)
Major: Electrical and Electronic Engineering
Courses: Electrical Machinery Theory, Electric Drive and Control Systems, Power Electronics

Skills

English: **IELTS** 6.5

Python Nodejs Rust Golang C/C++
Matlab Femm Ansys Photoshop Illustrator

Research Experience

Hi-Motor Series 2022 Mar. - now

▲ **Leader/Fullstack Developer**

- Lead a 18-undergraduate team for software development, related research and business collaboration.
- Develop *hi-motor designer* for design and optimization of high-performance motors, especially synchronous reluctance motors based on Python and Femm.

Design and Optimization of Flux-Barrier End shape in Synchronous Reluctance Motor Based on B-spines 2023 Aug. - 2023 Sep.

▲ **Principal Investigator**

- Propose a novel design method of flux-barrier end shape based on B-spline curves.
- Achieve an effective electro-mechanical co-optimization workflow with sensitivity analysis, surrogate model, intelligent algorithms and multi-level optimization.
- Provide optimized motor designs of decrease in torque ripple and max stress without significant effect on other machine performances.

New Energy Forecast and Consumption Platform 2023 May. - 2024 May.

▲ **Developer** Approved ¥20000 funding

- Propose time series forecast algorithms based om attention mechanism, TCN-BiLSTM network and decomposition-based error Correction
- Develop a web platform of new energy forecast and new energy consumption warning.

Strategic Internship, Bosch (China) Investment Ltd. 2023 Jul. - 2023 Aug.
2024 Jun. - 2024 Aug.

▲ **Fullstack Developer** CR/RMD-AP, Shanghai, China

- Design and optimization of switched reluctance motors used in power tools, including structure optimization, PFC circuit and sensorless control.

Outstanding Conclusion of Fundamental Research Funds for the Central Universities, HUST 2024 Jun. - 2025 Jun.

▲ **Principal Investigator** Approved ¥50000 Funding

- Design and optimization of permanent magnet assisted synchronous reluctance motor based on unequal turn winding.

Honors and Awards

China International College Students' Innovation Competition 2024 Oct. 12 - 16

▲ **Gold Award** Shanghai Jiao Tong University

IEEE Student Conference on Electric Machines and Systems 2023 Dec. 7 - 9

▲ **Best Presenter Award** Huzhou, China

Mathematical Contest In Modeling 2024 Feb. 2 - 5

▲ **Finalist(2%)** Student Advisor

▲ **Sieyuan Scholarship** (8/412) ▲ **Self-improvement Student** (7/412)

Extracurricular Activities

Association for Mathematical Modeling, HUST 2022 Oct. - 2023 Sep.

▲ **Vice President** Mathematical Modeling/Event Planing

- Organize school-wide and cross-school lectures for contests like MCM/ICM.
- Participate in textbook and video course development in mathematical modeling.

Publicity Department, Student Union of SEEE, HUST 2022 Sep. - 2023 Aug.

▲ **Minister** Writing/Graphic Design

- Generate positive publicity and media coverage of students and major events, such as the 70th anniversary celebration.

Peer Review Experience 2024 Sep. - now.

▲ **Peer Reviewer**

- 1 time for IEEE IAS Publications.

Publications

J Journal C Conference P Patent S Software Copyright

J T. He, Y. Wang, **M. Bao**, J. Li *et. al.*, "Design and Validation of a High-Efficiency Synchronous Reluctance Motor", *IEEE Transactions on Industry Applications*, pp. 1--11, Feb. 2025, doi: 10.1109/TIA.2025.3540735

C Y. Yi, Z. Huang, **M. Bao**, X. Li *et. al.*, "Multi-step Short-term Load Forecasting Based on Attention Mechanism, TCN-BiLSTM Network and Decomposition-based Error Correction", *2024 IEEE 7th Asia Conference on Energy and Electrical Engineering (ACEEE)*, pp. 224-231, July. 2024, doi: 10.1109/ACEEE62329.2024.10651918

C **M. Bao**, Y. Wang, C. Mao, J. Li *et. al.*, "Novel Design Method of Flux-Barrier End Shape of Synchronous Reluctance Motor Based on B-spline Curves", *2023 IEEE 6th Student Conference*

on Electric Machines and Systems (SCEMS), Huzhou, China, pp. 1--8, Dec. 2023, doi: 10.1109/SCEMS60579.2023.10379317

C T. He, Y. Wang, **M. Bao**, J. Li *et. al.*, "Design and Validation of a High-Efficiency Synchronous Reluctance Motor", *2023 IEEE 26th International Conference on Electric Machines and Systems (ICEMS)*, Zhuhai, China, pp. 1--8, Nov. 2023, doi: 10.1109/ICEMS59686.2023.10345091

P J. Li, K. Zhu, **M. Bao**, Y. Wang *et. al.*, "An Multi-Level Optimization Method And Application For Permanent Magnet Reluctance Motor Based On Improved Sensitivity Analysis", Invention Patent, Applying, March. 2025

P J. Li, **M. Bao**, C. Mao, Y. Wang *et. al.*, "Design Method of Flux-Barrier End Shape of Synchronous Reluctance Motor Based on B-spline Curves", Invention Patent, Applying, No. CN202411115087.7, Aug. 2024

P Y. Wang, J. Li, X. Li, **M. Bao** *et. al.*, "Rotor with Adjacent Pole Mirror Image of Synchronous Reluctance Motor and Permanent Magnet Assisted Synchronous Reluctance Motor", Invention Patent, Publication, No. CN116722678A, Sep. 2023

P Y. Wang, X. Li, J. Li, **M. Bao** *et. al.*, "A Permanent Magnet Assisted Synchronous Reluctance Motor of Low Torque Ripple", Invention Patent, Publication, No. CN116505683B, Apr. 2023

S **M. Bao**, K. Zhu and Y. Wang, "Hi-Motor MechEM: Motor Design Software for Electromagnetic-Mechanical Co-simulation V1.0", China Software Copyright, Publication, No. 2024SR2151709, Dec. 2024

S Y. Yi, **M. Bao**, S. Lou, Z. Huang *et. al.*, "Intelligent Analysis Platform for New Energy Consumption V1.0", China Software Copyright, Publication, No. 2024SR0786617, June. 2024

S **M. Bao**, S. Lu and Y. Wang, "Hi-Motor Hub: intelligent Selection Tool for High-efficiency Motors V1.0", China Software Copyright, Publication, No. 2023SR1417580, Nov. 2023

S **M. Bao**, J. Li, Y. Chen and Y. Wang, "Hi-Motor Designer: intelligent Software for Design and Optimization of Synchronous Reluctance Motor V1.0", China Software Copyright, Publication, No. 2023SR0446741, Apr. 2023

Referees

▲ Ronghai Qu, Professor of Huazhong University of Science and Technology, ronghaiqu@hust.edu.cn

▲ Yawei Wang, Associate Professor of Huazhong University of Science and Technology, yaweiwang@hust.edu.cn

▲ Xinhua Liu, Senior Engineer of Bosch (China) Investment Ltd., xinhua.liu@cn.bosch.com

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