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.

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, 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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