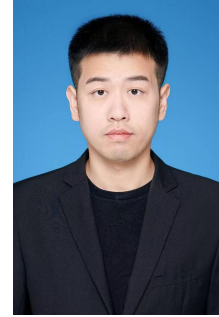


CURRICULUM VITAE



NAME: Chao He

SEX: Male

BIRTH DATE: September, 15 1995

DEGREE: PhD. Traffic and Transportation Engineering

NATIONALITY: China

INSTITUTION: School of Mechanical, Electronic and Control Engineering, Beijing Jiaotong University, China

BIOGRAPHY:

Dr. He has obtained a Ph.D. degree in Vehicle Application Engineering (Traffic and Transportation Engineering) from the School of Mechanical, Electronic and Control Engineering at Beijing Jiaotong University, under the supervision of Professor Hongmei Shi. The focus of his doctoral dissertation research is on Safety, Detection, and Control Technology.

Dr. He focuses on Safety, Detection and Control Technology. He has published **23** academic papers, including **5** first-author papers in CAS Top Tier 1 journals, **5** ESI Highly Cited Papers, and **3** ESI Hot Papers, with more than **1,100** citations on Google Scholar. He was awarded the National Scholarship for Doctoral Students (2024, 2025), Beijing Merit Student (2024), Outstanding Doctoral Dissertation of Beijing Jiaotong University (2026), and Outstanding Graduate of Beijing Jiaotong University (2026). He was selected into the First Batch of the Doctoral Program under the Young Talent Support Project of the China Association for Science and Technology (China Instrument and Control Society) in 2024, and also received the Second Prize of the National Commercial Science and Technology Progress Award in 2020. He serves as a reviewer for **38** international journals and conferences, and is an **Outstanding Reviewer** for IEEE Transactions on Instrumentation and Measurement, IEEE Access, and Measurement Science and Technology. He presides over **one** doctoral research project funded by the Fundamental Research Funds for the Central Universities, and participates in **four** research projects. Meanwhile, he takes part in the operation of a WeChat official account named Frontiers of Measurement, Control and Operation & Maintenance for Advanced Mechatronic Systems.

RESEARCH PROJECTS

- 1) Fundamental Research Funds for the Central Universities (No. 2024QYBS027).

HONORS AND AWARDS

- **Outstanding Doctoral Dissertation**, Beijing Jiaotong University, 2026
- **Outstanding Graduate**, Beijing Jiaotong University, 2026
- **IEEE Access Exceptional Reviewer**, 2025
- **IOP Outstanding Reviewer Awards for Measurement Science and Technology (MST)**, 2025
- **Outstanding Reviewer, Journal of IEEE Transactions on Instrumentation and Measurement (IEEE TIM)**, 2025
- **IOP Trusted Reviewer**, 2024
- **Outstanding Reviewer, Journal of IEEE Transactions on Instrumentation and Measurement**

(IEEE TIM), 2024

- **Beijing Merit Student**, 2024
- **The Doctoral Program of the Young Talent Support Project of the China Association for Science and Technology (China Instrument and Control Society)**, 2024

RESEARCH INTERESTS:

- ***Interpretable Intelligent Fault Diagnosis and Prognostics***

My research lies in the field of interpretable intelligent fault diagnosis and prognosis, dedicated to developing transparent and reliable data-driven methods for health monitoring of electromechanical systems. This work aims to break the black-box limitation of deep learning models and provide solid technical support for safe operation and predictive maintenance of industrial equipment.

- ***Anomaly Detection in Non-Ideal Industrial Scenarios***

My research centers on anomaly detection in non-ideal industrial scenarios, with a focus on typical safety anomaly tasks including smoking behavior detection and fire hazard detection. It aims to tackle common interferences in complex industrial environments to enhance detection robustness and support reliable on-site safety supervision.

JOURNAL PUBLICATIONS:

- [1] He C, Shi H, Si J, et al. Physics-informed interpretable wavelet weight initialization and balanced dynamic adaptive threshold for intelligent fault diagnosis of rolling bearings[J]. *Journal of Manufacturing Systems*, 2023, 70: 579-592. **(ESI highly-cited paper)**
- [2] He C, Shi H, Liao J X, et al. Prior knowledge-embedded first-layer interpretable paradigm for rail transit vehicle human-computer collaboration fault monitoring[J]. *Journal of Industrial Information Integration*, 2026, 51: 101068. **(ESI highly-cited paper)**
- [3] He C, Shi H, Liu X, et al. Interpretable physics-informed domain adaptation paradigm for cross-machine transfer diagnosis[J]. *Knowledge-Based Systems*, 2024, 288: 111499. **(ESI highly-cited paper)**
- [4] He C, Shi H, Li J. IDSN: A one-stage interpretable and differentiable STFT domain adaptation network for traction motor of high-speed trains cross-machine diagnosis[J]. *Mechanical Systems and Signal Processing*, 2023, 205: 110846.
- [5] He C, Shi H, Li R, et al. Interpretable modulated differentiable STFT and physics-informed balanced spectrum metric for freight train wheelset bearing cross-machine transfer fault diagnosis under speed fluctuations[J]. *Advanced Engineering Informatics*, 2024, 62: 102568. **(ESI highly-cited paper)**
- [6] Zhang X, He C, Lu Y, et al. Fault diagnosis for small samples based on attention mechanism[J]. *Measurement*, 2022, 187: 110242. **(ESI highly-cited paper)**
- [7] Luo H, He C, Chen B. Small sample fault diagnosis based on laplace wavelet convolution and bigru[J]. *Journal of Vibration and Shock*, 41: 41-50.
- [8] Luo H, He C, Zhou J, et al. Rolling bearing sub-health recognition via extreme learning machine based on deep belief network optimized by improved fireworks[J]. *IEEE Access*, 2021, 9: 42013-42026.
- [9] Jiang Z, Li J, He C, et al. Rolling Bearing Fault Diagnosis Method Integrating Deep Wavelet and Short-Time Fourier Transform [J]. *Journal of Mechanical Strength*, 2025. (CSCD Extended Edition, Accepted)
- [10] Liao J X, He C, Li J, et al. Classifier-guided neural blind deconvolution: A physics-informed denoising module for bearing fault diagnosis under noisy conditions[J]. *Mechanical Systems and*

- Signal Processing*, 2025, 222: 111750. **(ESI highly-cited paper)**
- [11] Liu B, Yan C, He C, et al. An interpretable physics-informed subdomain moment-enhanced adaptation network for unsupervised transfer fault diagnosis of rolling bearing[J]. *Advanced Engineering Informatics*, 2025, 67: 103491. **(ESI highly-cited paper)**
- [12] Wang M, Li M, He C. CCDM: Causality-Guided Contourlet Diffusion Models for Contour-Preserving Image Restoration in Indoor Work Sites[J]. *Expert Systems with Applications*, 2025, 305: 130912.
- [13] Chen B, Liu T, He C, et al. Fault diagnosis for limited annotation signals and strong noise based on interpretable attention mechanism[J]. *IEEE Sensors Journal*, 2022, 22(12): 11865-11880. Wei H, He C, Liu S, et al. Decoupling Machine and Operational Variances: A Spectral Attention Framework for Robust Few-Shot Cross-Machine Fault Diagnosis[J]. *Structural Control and Health Monitoring*, 2025.
- [14] Li R, Shi H, He C, et al. Adaptive multi-scale Laplace wavelet weighted fusion framework for heavy haul freight train fault diagnosis under limited sample with high-noise[J]. *Nondestructive Testing and Evaluation*, 2025.
- [15] Luo H, Zhang L, He C. Deep Diagnosis Methods for Industrial Equipment Systems[M]. *Liaoning University Press*, 2022.
- [16] Wang Y, Li Y, He C, et al. Robust subdomain distribution alignment with class-wise weight selection mechanism for mechanical fault transfer diagnosis[J]. *Measurement Science and Technology*, 2026, 37(4): 046208.
- [17] Liao J X, He C, Li J, et al. Heterogeneous Neural Blind Deconvolution: A Signal Processing Empowered Foundation Feature Extractor for Bearing Fault Diagnosis[J]. *Neural Networks*, 2026, 203: 109143.

CONFERENCE WORKS

- [1] Zhang W, Shi H, He C. Intelligent Detection of Freight Car Bolt Fault Based on Improved YOLOv3[C]//2023 Global Reliability and Prognostics and Health Management Conference (PHM-Hangzhou). IEEE, 2023: 1-4.