[XUE WEN]

[+86-17783583474] ◇ [Chongqing] ◇ xuewelkin@gmail.com

EDUCATION

Chongqing University
Master of statistics | Average score: 86.8/100 Sep 2023 - Jul 2026
Multivariate statistical analysis (96), Advanced Probability Theory (93), Advanced Statistics (91)

Southwest University
Bachelor of statistics | Average score: 78.1/100 Sep 2016 - Jul 2020
Advanced Algebra (97), Data Mining (95), Mathematical Statistics (94), Mathematical Analysis (91)

PUBLICATION

Zhang, X., **Wen, X.**, Lin, L., & Wang, H. (2025). Robust GSR array-assisted fast intelligent diagnosis for multi-harmonic fault characteristics under variable-speed conditions. *Mechanical Systems and Signal Processing.*

(Submitted 2025.05, revised 2025.09, accepted 2025.10)

Wen, X., Zhang, X., Lin, L., Shi, S., & Wang, H. Robust-GSR driven lightweight CNN framework for intelligent fault diagnosis under variable-speed conditions. *Nonlinear Dynamics.*

(Submitted 2025.04, revised 2025.09, under second review)

RESEARCH EXPERIENCE

Robust GSR-driven Intelligent Fault Diagnosis Framework Aug 2024 – Present
Chongqing University | Advisor: Prof. Huiqi Wang *Chongqing, China*

- Developed a **Robust GSR framework** extending classical SR and GSR theory with complete theoretical derivation and full implementation pipeline, integrating lightweight CNN for noise-resilient fault diagnosis with reproducible code on GitHub (https://github.com/XueWelkin/RGSRNN).
- Benchmarked 2D encoding techniques (CWT, GAF, MTF) and SR-based methods (EnvNN, OBSRNN, DuffNN, GSRNN); demonstrated superior noise resilience with MTF maintaining 92.94% accuracy under –9 dB SNR degradation (vs. 86.50% for CWT and 78.06% for GAF), and RGSRNN achieving 98.46% precision with lowest standard deviation.
- Benchmarked against lightweight networks (MobileNetV4, SqueezeNet, TinyViT) and end-to-end deep learning methods (WaveletKernelNet, WDCNN, TFN, LiConform), achieving 98.01% accuracy with over 90% reduction in training time (17.8s for 840 samples) and exceptional stability (std=0.17% over 20 trials).
- One paper is under second review in *Nonlinear Dynamics* (JCR Q1, Top 5% in Mathematics category).

Multi-Fault Harmonic Analysis Based on Robust GSR Framework Sep 2024 — Present
Chongqing University | Advisor: Prof. Huiqi Wang *Chongqing, China*

- Developed fault-order analysis framework for multi-fault harmonic research with **23 complete code repositories** including core algorithms, baseline methods, and visualization tools.
- Performed **cross-condition transfer** experiments (99.73% accuracy, 0.04% degradation) and **noise robustness validation** (94.99% at –6.17 dB SNR, 93.85% at –9.17 dB SNR), demonstrating stable parameter transferability with <2% performance variation.
- One paper is accepted in *Mechanical Systems and Signal Processing* https://doi.org/10.1016/j.ymssp.2025.113445 (JCR Q1, Top 1% in Engineering category).

Robust GSR-Based Peak Feature Learning for Signal Processing Aug 2024 – Present
Chongqing University | Advisor: Prof. Huiqi Wang *Chongqing, China*

- Developed **RGSRNet** incorporating **RGSR sparse spectral peak learning module** and **Wasserstein distance regularization loss** to simultaneously address small-sample and class-imbalance challenges, demonstrating 99.89% accuracy under severe imbalance (1:10) and data scarcity (0.03 training set) conditions.

- Validated across three public datasets (HUST: multi-fault uniform-speed, PU: multi-fault-severity uniform-speed, UO: variable-speed) achieving 98%-100% accuracy with superior noise resilience and small samlpe condition.
- One paper is ready for submission.

Statistical Monitoring and Pathways of Industrial Synergy Dec 2023 – Present
Chongqing Municipal Bureau of Statistics | Advisor: Prof. Huiqi Wang *Chongqing, China*

- Proposed a **"Five-Dimensional Enterprise Coupling Network"**, extending industrial risk analysis from single-factor evaluation to a multidimensional framework integrating financial, market, operational, technological, and socio-legal dimensions.
- Integrated multi-source heterogeneous data from CSMAR, WIND, SSE, and FinChina-SA; employed **large language models (LLMs)** to process unstructured financial reports and public opinion data, and developed **tensor-based representation** to unify multi-type data, addressing data heterogeneity and fusion limitations of conventional methods.

EXTRA-CURRICULAR ACTIVITIES

National University of Singapore Aug 2020 – Sep 2020
Project Topic: Essential Numerical Methods for Data Analytics and Financial Engineering

- Systematically studied Monte Carlo methods, variance reduction techniques, importance sampling, and advanced deep learning architectures including **Transformer**, **Diffusion**, and **GAN** for data science and ML applications.
- Enhanced **Diffusion** for stock K-line classification by integrating **time-frequency representations** with K-line images in a dual-input architecture, achieving 10.16% accuracy improvement to 95.94%.

Mathematical Modeling Competition Sep 2023
Project Topic: Establishing Risk Prediction and Progression Models for Hepatic Protection and Edema

- Designed complete solutions for hepatic protection risk prediction using **Gaussian Mixture Model (GMM)** with **EM algorithm**, and developed **COX regression** models for time-varying brain edema volume analysis and treatment intervention comparison.
- Produced most visual figures, including problem-specific flowcharts and the overall technical roadmap.
- Awarded the **national second prize**.

Open Source Contribution Jun 2024 – Present
Project Topic: CSDN Technical Blog for AI and Signal Processing

- Authored **19** technical articles on CSDN platform covering fault diagnosis algorithms (TFN, BDCNN), computational biology (ESM2, ChemBERT), and deep learning methodologies (Kernel function and bandwidth), achieving **52,000+** cumulative views and recognition in "2048 AI Community" and "Flying AI Developer Community".

AWARDS AND HONORS

Chongqing University Academic Scholarship (2023–2024) (2024–2025)
Outstanding Sports Individual of Chongqing University (2024)
National second prize of the 20th "Huawei Cup" Graduate Mathematical Modeling Competition (2023)
Provincial first prize of the "Shenzhen Cup" Mathematical Modeling Competition (2019)
Provincial second prize of the National Undergraduate Mathematical Contest in Modeling (2018)

SKILLS

Languages: English (GRE:164+170+4.0), Chinese (Native)
Programming Languages: Python / MATLAB / R / Stata / SPSS
Python Packages: NumPy / SciPy / sklearn / PyTorch / TensorFlow / Keras