

## Xufeng Huang

Ph.D. Student in Mechanical Engineering  
Huazhong University of Science and Technology  
Luoyu Road 1037, Wuhan, China, 430074  
**E-mail:** [huangxufeng@hust.edu.cn](mailto:huangxufeng@hust.edu.cn)  
**Website:** [huangxf.netlify.app](http://huangxf.netlify.app)

### RESEARCH INTEREST

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- Scientific Machine Learning
  - Digital Twin
  - Information Fusion

### EDUCATION

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- Ph.D., Mechanical Engineering** Sep. 2022 - Now  
Huazhong University of Science and Technology (HUST), Wuhan, Hubei, China  
• Advisor: Prof. Qi Zhou
- M.S., Mechatronic Engineering** Sep. 2016 - July 2019  
Guangxi University (GXU), Nanning, Guangxi, China  
• Thesis Title: "Deep Transfer Learning for Online Welding Quality Monitoring"
- B.S., Mechanical Design Manufacturing and Automation** Sep. 2012 - July 2016  
Huazhong University of Science and Technology (HUST), Wuhan, Hubei, China

### WORK EXPERIENCE

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- Research Assistant** July 2019 - July 2022  
Huazhong University of Science and Technology (HUST), Wuhan, Hubei, China  
• Prof. Qi Zhou's Group

### RESEARCH EXPERIENCE

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- Physics-Data-Fusion Modeling Technology for Digital Twin Deduction, 2023-2024, Key Member, ¥350,000
  - Reconstruction of Stress and Strain Fields in Combustion Chamber, 2023-2024, Key Member
  - Key Technology of Online Monitoring for Health Assessment System, 2022-2024, Key Member, ¥500,000
  - Research on the PHM Standard Framework of Equipment, 2019-2022, Participant, ¥3,000,000
  - Fault Diagnosis using Machine Learning for Typical Product, 2019-2021, Participant, ¥1,000,000
  - Key Technologies for Multi-Joint Industrial Robots, 2018-2019, Key Member, ¥18,000,000
  - Control strategy for multi-axis electromechanical servo motion control systems, 2016-2019, Participant, ¥480,000

## PUBLICATIONS

Google Scholar Citations: 239; h-index: 6 (as of May 2023)

<https://scholar.google.com/citations?user=nvFXXdYAAAAJ&hl=en>

### Refereed Journal Publications (published or accepted, \*Corresponding author)

- [1] Cao, L., Li, J. C., Zhang, L. B., Luo, S. Y., Li, M. L., **Huang, X.\*** (2023). Cross-attention-based multi-sensing signals fusion for penetration state monitoring during laser welding of aluminum alloy. *Knowledge-Based Systems*, 261, 110212. (IF: 8.139, JCR Q1)
- [2] **Huang, X.**, Lei, Q., Xie, T., Zhang, Y., Hu, Z., & Zhou, Q.\* (2020). Deep transfer convolutional neural network and extreme learning machine for lung nodule diagnosis on CT images. *Knowledge-Based Systems*, 204, 106230. (IF: 8.139, JCR Q1)
- [3] **Huang, X.**, Xie, T., Wang, Z., Chen, L., Zhou, Q.\*, & Hu, Z.\* (2022). A Transfer Learning-Based Multi-Fidelity Point-Cloud Neural Network Approach for Melt Pool Modeling in Additive Manufacturing. *ASCE-ASME J. Risk and Uncert. in Engrg. Sys. Part B Mech. Engrg.*, 8(1). (ESCI, July 2023 Update, JCR Q2)
- [4] Xie, T., **Huang, X.**, & Choi, S. K.\* (2022). Intelligent Mechanical Fault Diagnosis Using Multi-Sensor Fusion and Convolution Neural Network. *IEEE Transactions on Industrial Informatics*, 18(5), 3213-3223. (IF: 11.648, JCR Q1) (Highly Cited Paper)
- [5] Luo, S., **Huang, X.**, Wang, Y., Luo, R., & Zhou, Q.\* (2022). Transfer learning based on improved stacked autoencoder for bearing fault diagnosis. *Knowledge-Based Systems*, 256, 109846. (IF: 8.139, JCR Q1)
- [6] Xie, T., **Huang, X.**, & Choi, S. K.\* (2023). A data-driven adaptive algorithm and decision support design of multisensory information fusion for prognostics and health management applications. *Journal of Engineering Design*. (IF: 2.4, JCR Q2)
- [7] Xie, T., **Huang, X.**, & Choi, S. K.\* (2022). Metric-based Meta-Learning for Cross-Domain Few-Shot Identification of Welding Defect. *Journal of Computing and Information Science in Engineering*, 23(3), 030902. (IF: 2.3, JCR Q2)
- [8] Chen, L., **Huang, X.**, Liu, M., Yuan, S., He, F., Yi, J., & Pan, H. H.\* (2019). Optimized continuous trajectory look-ahead algorithm with comprehensive multi-constraints. *Chinese Journal of Mechanical Engineering*, 55(13), 151-159. (In Chinese) (EI)
- [9] Zhang, Y., Zhou, T., **Huang, X.**, Cao, L., & Zhou, Q.\* (2021). Fault diagnosis of rotating machinery based on recurrent neural networks. *Measurement*, 171, 108774. (IF: 5.131, JCR Q1) (Highly Cited Paper)
- [10] Li, J., Zhou, Q., **Huang, X.**, Li, M., & Cao, L.\* (2021). In situ quality inspection with layer-wise visual images based on deep transfer learning during selective laser melting. *Journal of Intelligent Manufacturing*, 34, 853-867. (IF: 7.136, JCR Q1)
- [11] Wu, J. H., Feng X. X., Cai X., **Huang, X.**, Zhou, Q.\* (2022). A deep learning-based multi-fidelity optimization method for the design of acoustic metasurface. *Engineering with Computers*, 1-19. (IF: 8.083, JCR Q1)

### Refereed Conference Publications

- [12] **Huang, X.**, Hu, Z.\*, Xie, T., Wang, Z., Chen, L., & Zhou, Q. (2021, August). Point-Cloud Neural Network Using Transfer Learning-Based Multi-Fidelity Method for Thermal Field Prediction in Additive Manufacturing. In *Proc. IDETC-CIE* (Vol. 85383, p. V03AT03A038). ASME. (Online Oral)
- [13] Xie, T., **Huang, X.**, & Choi, S. K.\* (2022, August). Information Fusion-based Meta-Learning for Few-Shot Fault Diagnosis under Different Working Conditions. In *Proc. IDETC-CIE* (Vol. 90934, p. V002T02A009). ASME.
- [14] Xie, T., **Huang, X.**, & Choi, S. K.\* (2021, August). Multi-Sensor Data Fusion for Rotating Machinery Fault Diagnosis Using Residual Convolutional Neural Network. In *Proc. IDETC-CIE* (Vol. 85376, p. V002T02A023). ASME.
- [15] Xie, T., **Huang, X.**, & Choi, S. K.\* (2023). Cross-Domain Health Conditions Identification Based on Joint Distribution Modeling of Fused Prototypes. In *Proc. IDETC-CIE*. ASME. (Accept)

### Refereed Patents (authorized)

- [16] Zhou, Q., **Huang, X.**, et al. (Sep. 2, 2022). Temperature Field Prediction for Fuel Tank of Hypersonic Aircraft using Point-Cloud Neural Network. China Invention Patent, CN114722732B.
- [17] Zhou, Q., Lin, Q., Jin P., **Huang, X.**, et al. (Sep. 9, 2022). Optimization Method of Layup Sequence of Conical Reinforced Cabin based on Fiber Continuity Model. China Invention Patent, CN114722509B.
- [18] Zhou, Q., Gong, L. T., Luo, S. Y., Wu, J. H., **Huang, X.**, et al. (May 9, 2023). A Method and System for Predicting the Remaining Speed of Ice-Breaking Underwater Structures. China Invention Patent, CN115828711B.

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- [19] Zhou, Q., Wu, J., Lin, Q., Hu, J. X., Liu, H. P., **Huang, X.**, et al. (Sep. 2, 2022). Fast Prediction of Acoustic Metasurface Sound Field using Multi-Fidelity Neural Network. China Invention Patent, CN114722690B.
- [20] Zhou, Q., Jiang, P., Zhang, L. L., Liu, H. P., Cheng, Y. S., Hu, J. X., **Huang, X.**, et al. (Sep. 9, 2022). Sequential Robust Optimization Design for Metamaterial Vibration Isolators. China Invention Patent, CN114792037B.

### Under Review or Revision Required

- [21] **Huang, X.**, Xie, T., Wu, J. H., Luo, S. Y., Wang, Y. Z., Zhou, Q.\* (2023). Deep Continuous Convolutional Networks for Fault Diagnosis. *IEEE Transactions on Industrial Informatics*. (With Editor) (IF: 11.648, JCR Q1)
- [22] **Huang, X.**, Xie, T., Luo, S. Y., Wu, J. H., Luo, R. M., Zhou, Q.\* (2023). Incremental Learning with Multi-Fidelity Information Fusion for Digital Twin-Driven Fault Diagnosis. *Knowledge-Based Systems*. (Under review) (IF: 8.139, JCR Q1)
- [23] **Huang, X.**, Xie, T., Wu, J. H., Xin, Y. Zhou, Q.\* (2023). Unsteady Temperature Field Prediction for Aircraft Fuel Tank using External Attention-Guided Point Neural Network. *Journal of Computational Physics*. (Under review) (IF: 4.645, JCR Q1)
- [24] **Huang, X.**, Xie, T., Wu, J. H., Hu, J. X.\*, Zhou, Q. (2023). Three-Dimensional Hybrid Fusion Networks for Current-based Fault Diagnosis. *IEEE Transactions on Instrumentation & Measurement*. (Major Revision) (IF: 5.332, JCR Q1)
- [25] Xie, T., **Huang, X.**, & Choi, S. K.\* (2023). Deep Meta-Learning with Joint Probability Distribution for Cross-Domain Fault Diagnosis. *IEEE Transactions on Industrial Informatics*. (Under review) (IF: 11.648, JCR Q1)

## AWARDS AND HONORS

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| • "National Second Prize", the 19 <sup>th</sup> China post-graduate mathematical contest in modeling | 2022        |
| • "National Second Prize", 2022 China (Tianjin) industrial innovation application                    | 2022        |
| • "Outstanding Academic Scholarship" in HUST   | 2022        |
| • "Best Student Award (co-author)", <a href="#">PHM Asia Pacific 2021</a>                            | 2021        |
| • "Outstanding Academic Scholarship" in GXU, every academic year                                     | 2016 - 2018 |
| • "Excellent Undergraduate" in HUST  | 2016        |
| • "Individual Scholarship" in HUST   | 2015        |

## REVIEW ACTIVITIES

- 
- Reliability Engineering & System Safety
  - Structural and Multidisciplinary Optimization
  - Journal of Manufacturing Processes
  - Journal of Big Data
  - ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems Part B: Mechanical Engineering
  - International Conference on Optoelectronic Information and Computer Engineering (OICE), 2023