

## Xufeng Huang

Ph.D. Student

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### RESEARCH INTEREST

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- Deep Learning
  - Digital Twin
  - Diagnosis System

### 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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- XXX under Grant No. XXX, "Research on Key Technology of Online Monitoring of XX Health Index System" Sep. 2022 – Now
  - The National Defense Basic-Research of China under Grant No. XXX, "Research on the PHM Standard Framework of Equipment" July 2019 - Oct. 2022
  - The National Defense Pre-Research Foundation of China under Grant No. XXX, "Research on the Fault Diagnosis Technology using Machine Learning for Typical Equipment" July 2019 - Dec. 2021
  - Guangxi Innovation Driven Development Project under Grant No. AA18118002 Dec. 2018 - May 2019
  - The National Natural Science Foundation of China (NSFC) under Grant No. 51465005 Sep. 2016 - May 2019

## PUBLICATIONS

<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.\*** (2022). Cross-attention-based multi-sensing signals fusion for penetration state monitoring during laser welding of aluminum alloy. *Knowledge-Based Systems*, 106230. DOI: [10.1016/j.knosys.2022.110212](https://doi.org/10.1016/j.knosys.2022.110212).
- [2] **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). DOI: [10.1115/1.4051749](https://doi.org/10.1115/1.4051749).
- [3] **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. DOI: [10.1016/j.knosys.2020.106230](https://doi.org/10.1016/j.knosys.2020.106230).
- [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. DOI: [10.1109/TII.2021.3102017](https://doi.org/10.1109/TII.2021.3102017).
- [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. DOI: [10.1016/j.knosys.2022.109846](https://doi.org/10.1016/j.knosys.2022.109846).
- [6] Xie, T., **Huang, X.**, & Choi, S. K.\* (2022). Metric-based Meta-Learning for Cross-Domain Few-Shot Identification of Welding Defect. *J. Comput. Inf. Sci. Eng.*, 23(3), 030902. DOI: [10.1115/1.4056219](https://doi.org/10.1115/1.4056219).
- [7] 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. *Journal of China Mechanical Engineering*, 55(13), 151-159. DOI: [10.3901/JME.2019.13.151](https://doi.org/10.3901/JME.2019.13.151). (In Chinese)
- [8] 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*, 1-15. DOI: [10.1007/s10845-021-01829-5](https://doi.org/10.1007/s10845-021-01829-5).
- [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. DOI: [10.1016/j.measurement.2020.108774](https://doi.org/10.1016/j.measurement.2020.108774).
- [10] 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. DOI: [10.1007/s00366-022-01765-9](https://doi.org/10.1007/s00366-022-01765-9).
- [11] Li, C. M., Wang, G. H.\*, Song, H. P., **Huang, X.**, Zhou, Q. (2022). Angular Disturbance Prediction for Countermeasure Launcher in Active Protection System of Moving Armored Vehicle Based on An Ensemble Learning Method. *Defence Technology*. DOI: [10.1016/j.dt.2022.10.007](https://doi.org/10.1016/j.dt.2022.10.007).

### 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 *International Design Engineering Technical Conferences and Computers and Information in Engineering Conference* (Vol. 85383, p. V03AT03A038). American Society of Mechanical Engineers. (EI) (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 *International Design Engineering Technical Conferences and Computers and Information in Engineering Conference* (Vol. 90934, p. V002T02A009). American Society of Mechanical Engineers. (EI)
- [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 *International Design Engineering Technical Conferences and Computers and Information in Engineering Conference* (Vol. 85376, p. V002T02A023). American Society of Mechanical Engineers. (EI)

### Refereed Patents (authorized)

- [15] Zhou, Q., **Huang, X.**, et al. (2022). Temperature Field Prediction for Fuel Tank of Hypersonic Aircraft using Point-Cloud Neural Network. China Invention Patent, CN114722732B. [Access Link](#).
- [16] Zhou, Q., Lin, Q., Hu, J. X., **Huang, X.**, et al. (2022). Verification method of solid engine simulation model under uncertainty. China Invention Patent, CN114722639A. [Access Link](#).
- [17] Zhou, Q., Lin, Q., Jin P., **Huang, X.**, et al. (2022). Optimization method of layup sequence of conical reinforced cabin

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based on fiber continuity model. China Invention Patent, CN114722509B. [Access Link](#).

- [18] Zhou, Q., Wu, J., Lin, Q., Hu, J. X., Liu, H. P., **Huang, X.**, et al. (2022). Fast prediction method of acoustic metasurface sound field based on variable reliability neural network. China Invention Patent, CN114722690B. [Access Link](#).
- [19] Zhou, Q., Jiang, P., Zhang, L. L., Liu, H. P., Cheng, Y. S., Hu, J. X., **Huang, X.**, et al. (2022). A Sequential Robust Optimization Design Method for Metamaterial Vibration Isolators. China Invention Patent, CN114792037B. [Access Link](#).

### Under Review or Revision Required

- [20] **Huang, X.**, Xie, T., Wu, J. H., Zhou, Q.\* (2022). Unsteady Temperature Field Prediction for Aircraft Fuel Tank using External Attention-Guided Point Neural Network. *Engineering Applications of Artificial Intelligence*. (Under review)
- [21] Xie, T., **Huang, X.**, & Choi, S. K.\* (2022). A Data-Driven Analysis Framework of Intelligent Sensor Selection for Multisensory Systems Design. *Journal of Engineering Design*. (Minor Revision)

## AWARDS AND HONORS

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- |  |             |
|--|-------------|
| • "National Second Prize", the 19 <sup>th</sup> China post-graduate mathematical contest in modeling | 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

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- Structural and Multidisciplinary Optimization
  - Journal of Manufacturing Processes
  - ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems Part B: Mechanical Engineering