Xufeng Huang

Ph.D. Student in Mechanical Engineering
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RESEARCH INTEREST

- Scientific Machine Learning
- Digital Twin
- Information Fusion

EDUCATION

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

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

RESEARCH EXPERIENCE

- 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.*** (2023). Cross-attention-based multi-sensing signals fusion for penetration state monitoring during laser welding of aluminum alloy. *Knowledge-Based Systems*, *261*, 110212. DOI: 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.

[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.

[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. (Highly Cited Papers)

[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.

[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*. DOI: 10.1080/09544828.2023.2177937.

[7] 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.

[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. *Journal of China Mechanical Engineering*, 55(13), 151-159. DOI: 10.3901/JME.2019.13.151. (In Chinese)

[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. (Highly Cited Papers)

[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*, 1-15. DOI: 10.1007/s10845-021-01829-5.

[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. DOI: 10.1007/s00366-022-01765-9.

[12] 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.

Refereed Conference Publications

[13] **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)

[14] 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)

[15] 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)

[16] 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.

[17] 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.

[18] Zhou, Q., Lin, Q., Jin P., **Huang, X.**, et al. (2022). Optimization method of layup sequence of conical reinforced cabin based on fiber continuity model. China Invention Patent, CN114722509B. Access Link.

[19] 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.

[20] 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

[21] **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)

[22] **Huang, X.**, Xie, T., Wu, J. H., Zhou, Q.* (2023). Unsteady Temperature Field Prediction for Aircraft Fuel Tank using External Attention-Guided Point Neural Network. *Engineering Applications of Artificial Intelligence*. (Under review)

[23] **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*. (Under review)

AWARDS AND HONORS

- "**National Second Prize**", the 19th 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)**", PHM Asia Pacific 2021 2021
- "**Outstanding Academic Scholarship**" in GXU, every academic year 2016 - 2018
- "**Excellent Undergraduate**" in HUST 2016
- "**Individual Scholarship**" in HUST 2015

REVIEW ACTIVITIES

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