# Curriculum Vitae


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## QUALIFICATIONS

09/2018-04/2024 Master and PhD Student in Mechanical Engineering, (Successive Master-Doctor Program), Shanghai University, China.

10/2022-10/2023 Visiting PhD Student in Mechanical Engineering, The University of Auckland, New Zealand.

09/2014-07/2018 Bachelor of Mechanical Engineering (Honours), Qingdao University of Science and Technology, China.

## SIGNIFICANT DISTINCTIONS

- "FangYao" scholarship, ≈1%, 2021, Shanghai University, China
- First-class scholarship, 20%, 2019, 2020 and 2021, Shanghai University, China.
- Outstanding graduate, 10%, 2018, Qingdao University of Science and Technology, China.

## RESEARCH TOPICS

- Application of **artificial neural network** algorithms (deep learning, few-shot learning) to perform multi-type weld seam identification based on image data.
- Development of **integrated vision sensors and software** to extract multiple welding parameters.
- Construction of **data integration and analysis systems** for robotic welding digital transformation.

***Professional Skills:*** *Python, OpenCV, PyTorch, Keras (TensorFlow), QT, SolidWorks, RoboDK, Blender*

## SELECTED PUBLICATIONS

[1] **Liu, H.**, Tian, Y., Lu, Y., Feng, J., Wang, T., Li, L., & Jiang, M. (2024). A systematic framework for tackling anomalous pre-welding workpiece postures with regular butt joints based on prototype features. *Journal of Manufacturing Systems*, 72: 323-337. Doi: 10.1016/j.jmsy.2023.11.018, *(Impact Factor:**12.2**, JCR: **Q1**).*

[2] **Liu, H.**, Tian, Y., Li, L., Lu, Y., Feng, J., & Xi, F. (2023). Full-cycle data purification strategy for multi-type weld seam classification with few-shot learning. *Computers in Industry*, *150*, 103939. Doi: 10.1016/j.compind.2023.103939, *(Impact Factor:**8.2**, JCR: **Q1**).*

[3] **Liu, H.**, Tian, Y., Li, L., Lu, Y., & Xi, F. (2023). One-shot, integrated positioning for welding initial points via co-mapping of cross and parallel stripes. *Robotics and Computer-Integrated Manufacturing*, *84*, 102602. Doi: 10.1016/j.rcim.2023.102602, *(Impact Factor:**9.1**, JCR: **Q1**).*

[4] Tian, Y., **Liu, H.**, Li, L., Yuan, G., Feng, J., Chen, Y., & Wang, W. (2020). Automatic identification of multi-type weld seam based on vision sensor with silhouette-mapping. *IEEE Sensors Journal*, *21*(4), 5402-5412. Doi: 10.1109/JSEN.2020.3034382, *(Impact Factor:**4.3**, JCR: **Q1**).*

[5] Tian, Y., **Liu, H.**, Li, L., Wang, W., Feng, J., Xi, F., & Yuan, G. (2020). Robust identification of weld seam based on region of interest operation. *Advances in Manufacturing*, *8*, 473-485. Doi: 10.1007/s40436-020-00325-y, *(Impact Factor:**4.2**, JCR: **Q2**).*

## PROJECT CONTRIBUTION

[1] Key technology research and demonstration line construction of advanced laser intelligent manufacturing equipment from Shanghai Lingang area development administration. （Pre-welding system development）

[2] Automatic oral sampling robot based on deep learning and image processing. (Oral feature extraction)

[3] Intelligent scoring platform development for robotics teaching based on image processing. （Target feature segmentation and statistics）

[4] Grain feature extraction and analysis system for terrazzo floors. （Grain feature extraction and analysis）

## OTHER JOURNAL PAPERS

[1] Wang, T., Jin, T., Lin, W., Lin, Y., **Liu, H**., Yue, T., ... & Lee, C. (2024). Multimodal sensors enabled autonomous soft robotic system with self-adaptive manipulation. *ACS nano*, 18(14), 9980-9996. Doi: 10.1021/acsnano.3c11281, *(Impact Factor:**15.8**, JCR: **Q1**)*.

[2] Feng, J., Ren, Q., Gao, J., Liu, S., Zhang, Y., Zhu, L., Chen, X., Jiang, M., **Liu, H.**, & Tian, Y. (2024). Laser welding of ultra-high strength steel rocket engine shell. *International Journal of Pressure Vessels and Piping*, 209, 105181. Doi:10.1016/j.ijpvp.2024.105181, *(Impact Factor:**3.0**, JCR: **Q1**)*.

[3] Feng, J., Liu, S., Zhu, L., Xia, L., Jiang, M., **Liu, H.**, ... & Zou, X. (2023). Laser welding for 30Cr3 ultra-high-strength steel. *The International Journal of Advanced Manufacturing Technology*, 128(5-6), 2639-2653. Doi: 10.1007/s00170-023-12092-8, *(Impact Factor:**2.9**, JCR: **Q2**)*.

[4] Tian, Y., Liu, F., **Liu, H.**, Liu, Y., Suwoyo, H., Jin, T., ... & Wang, J. (2023). A Real-Time and Fast LiDAR–IMU–GNSS SLAM System with Point Cloud Semantic Graph Descriptor Loop-Closure Detection. *Advanced Intelligent Systems*, 5(10), 2300138. Doi:10.1002/aisy.202300138, *(Impact Factor:**6.5**, JCR: **Q1**)*.