Hui Lin

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Education

Ph.D. student in Electrical Engineering **3.9/4.0** 09.2021 – Present
Northwestern University, advised by Aggelos Katsaggelos *Evanston, Illinois, USA*

Ph.D. student in Mechanical Engineering 09.2019 – 09.2021
Northwestern University (Transferred to Electrical Engineering) *Evanston, Illinois, USA*

M.S. in Mechanical Engineering **92.7/100.0** **rank 1** 09.2016 – 06.2019
Huazhong University of Science and Technology, advised by Bin Li and Xinggang Wang *Wuhan, Hubei, China*

B.S. in Materials Processing and Control Engineering **90.1/100.0** **rank 3** 09.2012 – 06.2016
Huazhong University of Science and Technology (Qiming College) *Wuhan, Hubei, China*

Skills

Machine Learning:	ResNet, RNN, GAN, UNet, Transformer, YOLO, SSD, GNN, Diffusion
Tools:	PyTorch, Docker, Git, CUDA, Numpy, Opencv, Scikt-learn, PyTorch Lightning
Programming:	Python, Matlab, SQL, C++, R, JavaScript
Medical:	MRI, X-ray, OCT, CT, ITK-SNAP, RadiAnt, ImageJ

Algorithm Competitions

MICCAI 2024	FLARE (Task 3)	ongoing
MICCAI 2024	MyoPS++	ongoing
ISBI 2024	JustRAIGS	5th Place (5%)
MICCAI 2023	ARCADE (Task 1 and 2)	3rd Place (1%)

Selected working and Research Experience (12 projects)

Hypertension classification and regression via Wearables OPPO US Research Center 06.2024-08.2024
- Developed **ResNet**, **Transformer**, and **LSTM** models to analyze wrist-collected **PPG signals**.
- Robust in dynamic, noisy, real-world environments.

Multi-modality Medical Image Segmentation 06.2023 – Present
- Applied **GAN** to translate images between modalities (**CT, MRI**) without needing paired data.
- Validated on a **large-scale** dataset achieving a notable **11.4% increase** in DSC and a **13.1% improvement** in NSD.

Segmentation of Large MRI Volumes 09.2021 – 09.2023
- Proposed **transposed transformer** blocks that reduce the size and computational complexity by 2.8x and 3.8x.

Temperature Trending in additive manufacturing processes 03.2020 – 12.2021
- Combined a **GNN** with a **GRU** to model spatiotemporal dependencies in additive manufacturing processes.
- Forecasted long-term thermal histories for unseen geometries.

Defect Image Sample Generation 10.2017 – 06.2019
- Pioneered using a **GAN** for generating industrial defect images.
- Enhanced the accuracy of anomaly detection by **0.80%** and defect classification by **2.95%**.

LED Chip Defect Detection 11.2015 – 06.2019
- Pioneered the simultaneous classification and localization of chip defects within a single **CNN**.
- Utilized **CAM** to localize defect regions without needing region-level human annotations.
- Outperformed others with an impressive accuracy with only **5.04% inaccuracy**.

Selected Publications (10 First-Author Papers, 679 citations)

[1] **Lin, H.**, Schiffers, F., et al.: DRL-STNet: Unsupervised Domain Adaptation for Cross-modality Medical Image Segmentation via Disentangled Representation Learning. Submitted to **MICCAI** 2024 Challenge.

[2] **Lin, H.**, Li, J., et al.: Longitudinal Wrist PPG Analysis for Reliable Hypertension Risk Screening Using Deep Learning. Submitted to **ICASSP** 2025.

[3] **Lin, H.**, Lopez Tapia, S., Schiffers, F., et al. Usformer: A Small Network for Left Atrium Segmentation of 3D LGE MRI. Heliyon (2024). (Talk, Slides)

[4] Mozaffar, M., Liao, S., **Lin, H.**, Ehmann, K. and Cao, J. Geometry-agnostic data-driven thermal modeling of additive manufacturing processes using graph neural networks. **Additive Manufacturing** (2021).

[5] Niu, S., Li, B., Wang, X. and **Lin, H.** Defect Image Sample Generation With GAN for Improving Defect Recognition. IEEE Transactions on Automation Science and Engineering (2020). **(210 citations)**

[6] **Lin, H.**, Li, B., Wang, X. et al. Automated defect inspection of LED chip using deep convolutional neural network. Journal of Intelligent Manufacturing (2019). **(245 citations)**