Hui Lin

Machine Learning · Computer Vision · Signal Processing · Image Generation · Healthcare Application

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Education

Ph.D. student in Electrical Engineering **3.9/4.0** 09.2019 - 05.2025
Northwestern University, advised by Aggelos Katsaggelos and Daniel Kim *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, Pandas, Opencv, Scikt-learn, SciPy, Caffe, AWS
Programming:	Python, Matlab, SQL, Spark, C++, R, JavaScript

Algorithm Competitions

MICCAI 2024	FLARE (ranked 5th), MyoPS++ (ranked 2nd), MBAS, DIAMOND
ISBI 2024	JustRAIGS (ranked 5th)
MICCAI 2023	ARCADE (ranked 3rd)

Selected Working and Research Experience (13 projects)

H5 Game Recommendation System Design OPPO US Research Center 02.2025-current

- Developed feature engineering, **XGboost**, and **Wide&Deep** to process trillion-scale user behavior data
- Conduct A/B testing and causal inference analysis

Unsupervised Domain Adaptation for Medical Image Segmentation 06.2023 – 02.2025

- 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.

Hypertension Classification via Wrist-collected PPG OPPO US Research Center 06.2024-08.2024

- Developed **ResNet**, **Transformer**, and **LSTM** models with over 68k spot-check instances from 358 subjects.
- Our **compact** model, with just 0.124M parameters, outperformed others in **dynamic, noisy, real-world** scenarios.

Coronary Artery Segmentation and Stenosis Detection 05.2023 – 02.2024

- Proposed ensemble models based on **YOLO** and **UNet**, trained on preprocessed data to address challenges of low contrast and non-uniform illumination
- Our method achieved an impressive **3rd** place ranking out of over **200** entries, with an F1 score of 0.5348.

Temperature Trending in Additive Manufacturing Processes 03.2020 – 12.2021

- **Meshed** parts with diverse and complex geometries, and simulated temperature history using **FEA**.
- Combined a **GNN** with a **GRU** to forecast long-term thermal histories for unseen geometries.

Defect Image Sample Generation 10.2017 – 06.2019

- Combining **CycleGAN** and **D2GAN** 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 (12 First-Author Papers, 824 citations)

Longitudinal Wrist PPG Analysis for Reliable Hypertension Risk Screening ICASSP 2025
***Lin, H.**, Li, J., et al.*

DRL-STNet: UDA for Cross-modality Medical Image Segmentation MICCAI 2024 workshop
***Lin, H.**, Schiffers, F., et al.*

Brighteye: Glaucoma Screening with Color Fundus Photographs based on Vision Transformer ISBI 2024
***Lin, H.**, Apostolidis, C., Katsaggelos, A.*

Usformer: A small network for left atrium segmentation of 3D LGE MRI Heliyon
***Lin, H.**, López-Tapia, S., Katsaggelos, A., et al.*

Defect Image Sample Generation with GAN for Improving Defect Recognition IEEE TASE
*Niu, S., Li, B., Wang, X. and **Lin, H.*** *252 citations*

Automated Defect Inspection of LED Chip using Deep Convolutional Neural Network JIM
***Lin, H.**, Li, B., Wang, X. et al.* *263 citations*

Geometry-agnostic Data-driven Thermal Modeling using GNNs Additive Manufacturing
*Mozaffar, M., Liao, S., **Lin, H.**, Ehmann, K. and Cao, J.* *59 citations*