

# Hui Lin

Machine Learning · Computer Vision · Signal Processing · Medical Application

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## Education

<b>Ph.D. student in Electrical Engineering</b>	<b>3.9/4.0</b>		09.2019 – Current
<i>Northwestern University, advised by Aggelos Katsaggelos</i>			<i>Evanston, Illinois, USA</i>
<b>M.S. in Mechanical Engineering</b>	<b>92.7/100.0</b>	<b>rank 1</b>	09.2016 – 06.2019
<i>Huazhong University of Science and Technology, advised by Bin Li and Xinggang Wang</i>			<i>Wuhan, Hubei, China</i>
<b>B.S. in Materials Processing and Control Engineering</b>	<b>90.1/100.0</b>	<b>rank 3</b>	09.2012 – 06.2016
<i>Huazhong University of Science and Technology (Qiming College)</i>			<i>Wuhan, Hubei, China</i>

## Skills

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

## Algorithm Competitions

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

## Selected Working and Research Experience (12 projects)

<b>Hypertension Classification and Regression via Wearables</b>	OPPO US Research Center	06.2024-08.2024
<ul style="list-style-type: none"><li>Developed <b>ResNet</b>, <b>Transformer</b>, and <b>LSTM</b> models to analyze wrist-collected <b>PPG signals</b>.</li><li>Robust in dynamic, noisy, real-world environments.</li></ul>		
<b>Unsupervised Domain Adaptation for Medical Image Segmentation</b>		06.2023 – Present
<ul style="list-style-type: none"><li>Applied <b>GAN</b> to translate images between modalities (<b>CT</b>, <b>MRI</b>) without needing paired data.</li><li>Validated on a <b>large-scale</b> dataset achieving a notable <b>11.4% increase</b> in DSC and a <b>13.1% improvement</b> in NSD.</li></ul>		
<b>Segmentation of Large MRI Volumes</b>		09.2021 – 09.2023
<ul style="list-style-type: none"><li>Proposed <b>transposed transformer</b> blocks that reduce the size and computational complexity by 2.8x and 3.8x.</li></ul>		
<b>Temperature Trending in Additive Manufacturing Processes</b>		03.2020 – 12.2021
<ul style="list-style-type: none"><li><b>Meshed</b> parts with diverse and complex geometries, and simulated temperature history using <b>FEA</b>.</li><li>Combined a <b>GNN</b> with a <b>GRU</b> to forecast long-term thermal histories for unseen geometries.</li></ul>		
<b>Defect Image Sample Generation</b>		10.2017 – 06.2019
<ul style="list-style-type: none"><li>Pioneered using a <b>GAN</b> for generating industrial defect images.</li><li>Enhanced the accuracy of anomaly detection by <b>0.80%</b> and defect classification by <b>2.95%</b>.</li></ul>		
<b>LED Chip Defect Detection</b>		11.2015 – 06.2019
<ul style="list-style-type: none"><li>Pioneered the simultaneous classification and localization of chip defects within a single <b>CNN</b>.</li><li>Utilized <b>CAM</b> to localize defect regions without needing region-level human annotations.</li><li>Outperformed others with an impressive accuracy with only <b>5.04% inaccuracy</b>.</li></ul>		

## Selected Publications (10 First-Author Papers, 681 citations)

<b>DRL-STNet: UDA for Cross-modality Medical Image Segmentation</b>	MICCAI 2024
<i>Lin, H., Schiffers, F., et al.</i>	
<b>Brighteye: Glaucoma Screening with Color Fundus Photographs based on Vision Transformer</b>	ISBI 2024
<i>Lin, H., Apostolidis, C., Katsaggelos, A.</i>	
<b>Defect Image Sample Generation with GAN for Improving Defect Recognition</b>	IEEE TASE
<i>Niu, S., Li, B., Wang, X. and Lin, H.</i>	
	211 citations
<b>Automated Defect Inspection of LED Chip using Deep Convolutional Neural Network</b>	JIM
<i>Lin, H., Li, B., Wang, X. et al.</i>	
	245 citations
<b>Geometry-agnostic Data-driven Thermal Modeling using GNNs</b>	Additive Manufacturing
<i>Mozaffar, M., Liao, S., Lin, H., Ehmann, K. and Cao, J.</i>	
	50 citations
<b>Longitudinal Wrist PPG Analysis for Reliable Hypertension Risk Screening</b>	Submitted to ICASSP 2025
<i>Lin, H., Li, J., et al.</i>	

## Others

<b>Teaching Assistant</b>	Machine Learning: Foundations, Applications, and Algorithms	09.2024-Current
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