Lin Dongyun

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Educational and Working Background

2018
2022
Research Scientist, *Institute for Infocomm Research (I2R), Agency for Science, Technology and Research (A*STAR)*, Singapore.

2014
2018
PhD Electrical & Electronic Engineering, *Nanyang Technological University, School of Electrical and Electronic Engineering*, Singapore.

2009
2013
BSc Information and Electronic Engineering, *Beijing Institute of Technology, School of Information and Electronic*, Beijing, China.

Affiliations

SINGAPORE Institute for Infocomm Research, A*STAR

Theses

PhD Thesis

TITLE Robust classification and detection with applications in biomedical images

SUPERVISOR Associate Professor Zhiping, Lin
School of Electrical & Electronic Engineering, Nanyang Technological University

CO-SUPERVISOR Professor Aiqun, Liu
School of Electrical & Electronic Engineering, Nanyang Technological University

BSc Thesis

TITLE Improvement on the performance of wireless transmission based on 802.11n

SUPERVISOR Associate Professor Hai, Li
Professional Mobile Communication Research Group of Radar Technology Institute

Research Interests

MACHINE LEARING
COMPUTER VISION

- Biomedical image analysis
- Computer Vision
- Deep Learning
- Statistical learning theory

Skills

PROGRAMING   Proficient in Python, Matlab, C, LaTeXand deep learning framework Pytorch

COMMUNICATIONS   English: proficient in speaking and writing. Chinese: mother tongue.

Research and Industrial Experience

2021 / 2022 — **Automatic Workflow Tracing and Optimization for Prescriptive MRO.**

ADVISORS   Project Investigator Yiqun Li
Institute for Infocomm Research (I2R), Agency for Science, Technology and Research (A*STAR)

2019 / 2020 — **Masked Face Detection and Recognition (Covid related projects.**

ADVISORS   Project Investigator Yiqun Li
Institute for Infocomm Research (I2R), Agency for Science, Technology and Research (A*STAR)

2018 / 2019 — **Multimodal Bicycle Parking Place Identification for Shared-bicycle Parking Enforcement.**

ADVISORS   Project Investigator Yiqun Li
Institute for Infocomm Research (I2R), Agency for Science, Technology and Research (A*STAR)

2014 / 2018 — **Robust classification and detection with applications in biomedical images (PhD topic).**

ADVISORS   Associate Professor Zhiping, Lin and Professor Aiqun, Liu
School of Electrical & Electronic Engineering, Nanyang Technological University

2015 — **Automated Classification of parasites from scatter images generated from a microfluid system (part of PhD work).**

ADVISOR   Professor Aiqun, Liu
School of Electrical & Electronic Engineering, Nanyang Technological University

2017 — **Automated detection of ring-like endosomal structures from microscopy images (part of PhD work).**

ADVISOR   Professor Raimund J. Ober
Ward Ober Lab, Texas A&M University, U.S.A

2012
2013

Designing and implementing the base station system based on the TETRA (Trans European Trunked Radio) communication protocol (Undergrad).

ADVISOR Associate Professor Hai, Li
Professional Mobile Communication Research Group of Radar Technology Institute

Teaching Experience

Tutor

2016

Signal and system, *EE2010*, School of E.E.E, NTU, Singapore.

Lab Teaching Assistant

2016
2017

Signal and system, *EE2010L*, School of E.E.E, NTU, Singapore.

Mentor of Undergraduate Students

2016
2018

Transfer learning for biomedical image classification using deep neural networks, School of E.E.E, NTU, Singapore.

Supervisor of Graduate Internship Students

2021
2022

Research on identifying industry components using multi-view deep learning models, I2R, A*STAR, Singapore.

2015
2016

Automated segmentation of melasma from skin images, School of E.E.E, NTU, Singapore.

Awards

PhD Scholarship

2014
2018

NTU Research Scholarship (PhD), Nanyang Technological University, Singapore.

Grand Competition

2022
2022

1st Place in EPIC-Kitchens Dataset Challenges: Unsupervised Domain Adaptation for Action Recognition Track, I2R, A*STAR, Singapore.

Research Highlight in Magzine

2022
2022

Research Work on Defect Detection and Segmentation is shown in A*STAR Research Highlight, I2R, A*STAR, Singapore.

Publications

[1] Dongyun Lin, Yiqun Li, Yi Cheng, Shitala Prasad, Aiyuan Guo, and Yanpeng Cao. Multi-range view aggregation network with vision transformer

feature fusion for 3d object retrieval. *IEEE Transactions on Multimedia*, 2023.

[2] Yanlong Cao, Wenbin Zhu, Jiangxin Yang, Guizhong Fu, Dongyun Lin, and Yanpeng Cao. An effective industrial defect classification method under the few-shot setting via two-stream training. *Optics and Lasers in Engineering*, 161:107294, 2023.

[3] Dongyun Lin, Yiqun Li, Yi Cheng, Shitala Prasad, Tin Lay Nwe, Sheng Dong, and Aiyuan Guo. Multi-view 3d object retrieval leveraging the aggregation of view and instance attentive features. *Knowledge-Based Systems*, page 108754, 2022.

[4] Shitala Prasad, Yiqun Li, Dongyun Lin, Sheng Dong, and Ma Tin Lay Nwe. A progressive multi-view learning approach for multi-loss optimization in 3d object recognition. *IEEE Signal Processing Letters*, 29:707–711, 2021.

[5] Dongyun Lin, Yiqun Li, Shitala Prasad, Tin Lay Nwe, Sheng Dong, and Zaw Min Oo. CAM-guided multi-path decoding u-net with triplet feature regularization for defect detection and segmentation. *Knowledge-Based Systems*, 228:107272, 2021.

[6] Dongyun Lin, Yiqun Li, Shudong Xie, Tin Lay Nwe, and Sheng Dong. DDR-ID: Dual deep reconstruction networks based image decomposition for anomaly detection. *Journal of Ambient Intelligence and Humanized Computing*, pages 1–15, 2021.

[7] Dongyun Lin, Yiqun Li, Tin Lay Nwe, Sheng Dong, and Zaw Min Oo. RefineU-Net: Improved U-Net with progressive global feedbacks and residual attention guided local refinement for medical image segmentation. *Pattern Recognition Letters*, 2020.

[8] Dongyun Lin, Lei Sun, Kar-Ann Toh, Jing Bo Zhang, and Zhiping Lin. Twin SVM with a reject option through ROC curve. *Journal of the Franklin Institute*, 355(4):1710 – 1732, 2018.

[9] Dongyun Lin, Lei Sun, Kar-Ann Toh, Jing Bo Zhang, and Zhiping Lin. Biomedical image classification based on a cascade of an SVM with a reject option and subspace analysis. *Computers in Biology and Medicine*, 96:128 – 140, 2018.

[10] Dongyun Lin, Zhiping Lin, Jiuwen Cao, Ramraj Velmurugan, E Sally Ward, and Raimund J Ober. A two-stage method for automated detection of ring-like endosomes in fluorescent microscopy images. *PloS one*, 14(6):e0218931, 2019.

[11] Dongyun Lin, Yi Cheng, Yiqun Li, Shitala Prasad, and Aiyuan Guo. Mlsa-unet: End-to-end multi-level spatial attention guided unet for industrial defect segmentation. In *2022 IEEE International Conference on Image Processing (ICIP)*, pages 441–445. IEEE, 2022.

[12] Dongyun Lin, Yiqun Li, Yi Cheng, Shitala Prasad, and Aiyuan Guo. Masked face recognition via self-attention based local consistency regularization. In

2022 IEEE International Conference on Image Processing (ICIP), pages 436–440. IEEE, 2022.

[13] Shitala Prasad, Yiqun Li, Dongyun Lin, and Aiyuan Guo. Implicit shape biased few-shot learning for 3d object generalization. In *2022 IEEE International Conference on Image Processing (ICIP)*, pages 3436–3440. IEEE, 2022.

[14] Tin Lay Nwe, Ramanpreet Singh Pahwa, Richard Chang, Oo Zaw Min, Wang Jie, Yiqun Li, Dongyun Lin, Shitala Prasad, and Sheng Dong. On the use of component structural characteristics for voxel segmentation in semicon 3d images. In *ICASSP 2022-2022 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, pages 2694–2698. IEEE, 2022.

[15] Dongyun Lin, Yanpeng Cao, Wenbin Zhu, and Yiqun Li. Few-shot defect segmentation leveraging abundant defect-free training samples through normal background regularization and crop-and-paste operation. In *2021 IEEE International Conference on Multimedia and Expo (ICME) (Oral Presentation)*.

[16] Dongyun Lin, Yiqun Li, Shitala Prasad, Tin Lay Nwe, Sheng Dong, and Zaw Min Oo. Cam-guided U-Net with adversarial regularization for defect segmentation. In *2021 IEEE International Conference on Image Processing (ICIP)*. IEEE.

[17] Yi Cheng, Ying Sun, Dongyun Lin, and Joo-Hwee Lim. Action relational graph for weakly-supervised temporal action localization. In *2021 IEEE International Conference on Image Processing (ICIP)*. IEEE.

[18] Dongyun Lin, Zhiping Lin, Ramraj Velmurugan, and Raimund J Ober. Automatic endosomal structure detection and localization in fluorescence microscopic images. In *Circuits and Systems (ISCAS), 2017 IEEE International Symposium on*, pages 1–4. IEEE, 2017.

[19] Dongyun Lin, Zhiping Lin, Lei Sun, Kar-Ann Toh, and Jiuwen Cao. LLC encoded BoW features and softmax regression for microscopic image classification. In *Circuits and Systems (ISCAS), 2017 IEEE International Symposium on*, pages 1–4. IEEE, 2017.

[20] Dongyun Lin, Zhiping Lin, Shakeela Sothiharan, Lei Lei, and Jingbo Zhang. An SVM based scoring evaluation system for fluorescence microscopic image classification. In *Digital Signal Processing (DSP), 2015 IEEE International Conference on*, pages 543–547. IEEE, 2015.

[21] Dongyun Lin, Yiqun Li, Shitala Prasad, Tin Lay Nwe, Sheng Dong, and Zaw Min Oo. CAM-UNET: Class activation map guided UNET with feedback refinement for defect segmentation. In *2020 IEEE International Conference on Image Processing (ICIP)*. IEEE.

[22] Shitala Prasad, Yiqun Li, Dongyun Lin, and Dong Sheng. maskedfacenet: A progressive semi-supervised masked face detector. In *Proceedings of the*

IEEE/CVF Winter Conference on Applications of Computer Vision, pages 3389–3398, 2021.

[23] Shitala Prasad, Dongyun Lin, Yiqun Li, Dong Sheng, and Oo Zaw Min. Rethinking of deep models parameters with respect to data distribution. In *2020 25th International Conference on Pattern Recognition (ICPR)*, pages 8562–8569. IEEE, 2021.

[24] Zhiyong Chen, Jiuwen Cao, Dongyun Lin, Jianzhong Wang, and Xuegang Huang. Vibration source classification and propagation distance estimation system based on spectrogram and kelm. *Cognitive Computation and Systems*, 1(1):26–33, 2019.

[25] Long D Nguyen, Ruihan Gao, Dongyun Lin, and Zhiping Lin. Biomedical image classification based on a feature concatenation and ensemble of deep cnns. *Journal of Ambient Intelligence and Humanized Computing*, pages 1–13, 2019.

[26] Tin Lay Nwe, Zaw Min Oo, Saisubramaniam Gopalakrishnan, Dongyun Lin, Shitala Prasad, Sheng Dong, Yiqun Li, and Ramanpreet Singh Pahwa. Improving 3d brain tumor segmentation with predict-refine mechanism using saliency and feature maps. In *2020 IEEE International Conference on Image Processing (ICIP)*. IEEE.

[27] Xu Zhang, Yunfeng Liang, Dongyun Lin, Zhiping Lin, Steven Tien Guan Thng, Emily Yiping Gan, and Evelyn Yuxin Tay. Reaction-diffusion based level set method with local entropy thresholding for melasma image segmentation. In *Control, Automation, Robotics and Vision (ICARCV), 2016 14th International Conference on*, pages 1–5. IEEE, 2016.

[28] Long D Nguyen, Dongyun Lin, Zhiping Lin, and Jiuwen Cao. Deep CNNs for microscopic image classification by exploiting transfer learning and feature concatenation. In *Circuits and Systems (ISCAS), 2018 IEEE International Symposium on*, pages 1–5. IEEE, 2018.

[29] Huiping Zhuang, Beom-Seok Oh, Dongyun Lin, Kar-Ann Toh, and Zhiping Lin. Multicomponent signal decomposition using morphological operations. In *2018 IEEE 23rd International Conference on Digital Signal Processing (DSP)*, pages 1–5. IEEE, 2018.

[30] Tin Lay Nwe, Balaji Nataraj, Xie Shudong, Li Yiqun, Lin Dongyun, and Dong Sheng. Discriminative features for incremental learning classifier. In *2019 IEEE International Conference on Image Processing (ICIP)*, pages 1990–1994. IEEE, 2019.

[31] Shudong Xie, Yiqun Li, Dongyun Lin, Tin Lay Nwe, and Sheng Dong. Meta module generation for fast few-shot incremental learning. In *The IEEE International Conference on Computer Vision (ICCV) Workshops*, Oct 2019.

[32] Tin Lay Nwe, Ramanpreet Singh Pahwa, Richard Chang, Zaw Min Oo, Wang Jie, Yiqun Li, Dongyun Lin, Shitala Prasad, and Dong Sheng. On the use of component structural characteristics for voxel segmentation in

semicon 3D images. In *2022 IEEE International Conference on Acoustics, Speech and Signal Processing*. IEEE.