YI WANG

Department of Electronic and Information Engineering, The Hong Kong Polytechnic University, Hong Kong
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URL: Homepage, Google Scholar, ORCID, LinkedIn, GitHub

EDUCATION

Nanyang Technological University (NTU), Singapore

2017.7-2021.8 **Ph.D.** at School of Electrical and Electronic Engineering
Thesis: Dense Prediction and Deep Learning in Complex Visual Scenes
Supervisor: Prof. Lap-Pui Chau, PolyU (Current), NTU (1997 to 2022)

Northwestern Polytechnical University (NPU), China

2013.9-2016.3 **M.Eng.** in Signal and Information Processing
Thesis: Low-Light Image Denoising based on Sparse Representation
Supervisor: Prof. Shuai Wan

2009.9-2013.6 **B.Eng.** in Electronic and Information Engineering
Thesis: Design of Multi-Channel Image Acquisition System based on FPGA
Supervisor: Prof. Shuai Wan

RESEARCH INTERESTS

Image/Video Processing, Computer Vision, Machine Learning, Intelligent Transport System, Digital Forensics

WORK EXPERIENCES

Department of Electronic and Information Engineering, Hong Kong PolyU

2023.4-till now **Research Assistant Professor**

Centre for Information Sciences and Systems, NTU

2020.9-2023.3 **Research Follow** (from 2021.10) with Associate Prof. Yap Kim Hui,
Research Associate (till 2021.9).
Design and develop a JPEG identification and carving algorithm from the damaged media based on deep learning and image processing in the project of **Computer-Aided Image and Video Data Analysis of Recovered Data from Flash Memory** (funded by National Cybersecurity R&D Programme, National Research Foundation, Singapore).

ST Engineering-NTU Corporate Lab, NTU

2019.5-2020.8 Research Associate with Associate Prof. Lap-Pui Chau.
Develop high-performing vehicle detection and tracking algorithm for traffic surveillance in the project of **Enhanced Deep Learning based Detector and Tracker for Video Analytics** (funded by National Research Foundation Singapore and ST Engineering Electronics).

Rapid-Rich Object Search (ROSE) Lab, NTU

2018.12-2019.4 Research Associate.
Develop object detection and tracking algorithm for 3D depth data in the project of **Object Segmentation and Tracking for 3D Depth Data** (funded by OMRON Corp.).

Smart Mobility Experience Lab (SMEL), NTU

2017.2-2018.11 Research Associate with Associate Prof. Lap-Pui Chau.
Research on crowed counting and detection, and vehicle tracking algorithms in the project of NTU-NXP **Smart Mobility Test Bed** (funded by Singapore Economic Development Board).

Maritime Institute, NTU

2016.5-2017.1 Research Associate with Associate Prof. Lap-Pui Chau.
Research on underwater image restoration and haze removal in the project of **Contrast Enhanced Vision for Deepwater Monitoring System** (funded by Singapore Maritime Institute).

School of Electronics and Information, NPU

2013-2015 Assistant with Prof. Shuai Wan and and Associate Prof. Shaohui Mei.
Research on design and implementation of the micro image acquisition and compression system based on FPGA.

Dance Robot Center, NPU

2010-2013 Team Leader of the electronic group with Mentor Yingliang Huang.
Responsible for robot system design, PCB design, and microprocessor programming.

PUBLICATIONS & PATENTS

Journal Articles:

[1] **Yi Wang**, Wenyang Liu, Lap-Pui Chau, and Kim Hui Yap. "File fragment classification with joint self-attention network." **under review** at *IEEE Transactions on Information Forensics and Security*, 2023.

[2] Gong Chen, Yanan Zhao, **Yi Wang**, and Kim-Hui Yap, "SSN: Stockwell Scattering Network for SAR Image Change Detection," *IEEE Geoscience and Remote Sensing Letters*, 2023. (**Corresponding Author**)

[3] Kejun Wu, Qiong Liu, **Yi Wang**, and You Yang. "End-to-end varifocal multiview images coding framework from data acquisition end to vision application end." Optics Express 31, no. 7: 11659-11679, 2023.

[4] **Yi Wang**, Zhen-Peng Bian, Yunhao Zhou, and Lap-Pui Chau, "Rethinking and designing a high-performing automatic license plate recognition approach," *IEEE Transactions on Intelligent Transport System*, 23(7): 8868-8880, 2022.

[5] Lisha Tang, **Yi Wang**, and Lap-Pui Chau. "Weakly-supervised part-attention and mentored networks for vehicle re-identification," *IEEE Transactions on Circuits and Systems for Video Technology*, 32(12): 8887-8898, 2022. (**Corresponding Author**)

[6] Yunhao Zhou, **Yi Wang**, and Lap-Pui Chau, "Moving towards centers: re-ranking with attention and memory for re-identification," *IEEE Transactions on Multimedia*, 2022.

[7] Huiping Zhuang, **Yi Wang**, Qinglai Liu, and Zhiping Lin, "Fully decoupled neural network learning using delayed gradients," *IEEE Transactions on Neural Networks and Learning Systems*, 33(10): 6013-6020, 2022.

[8] **Yi Wang**, Junhui Hou, Xinyu Hou, and Lap-Pui Chau, "A self-training approach for point-supervised object detection and counting in crowds," *IEEE Transactions on Image Processing*, 30: 2876-2887, 2021.

[9] **Yi Wang**, Zhen-Peng Bian, Junhui Hou, Lap-Pui Chau, "Convolutional neural networks with dynamic regularization," *IEEE Transactions on Neural Networks and Learning Systems*, 32(5): 2299-2304, 2020.

[10] **Yi Wang**, Hui Liu and Lap-Pui Chau, "Single underwater image restoration using adaptive attenuation-curve prior," *IEEE Transactions on Circuits and Systems I: Regular Papers*, 65(3): 992-1002, 2018.

Conference papers:

[1] Wenyang Liu, **Yi Wang**, Kim-Hui Yap, and Lap-Pui Chau, " Bitstream-Corrupted JPEG Images are Restorable: Two-stage Compensation and Alignment Framework for Image Restoration," CVPR, 2023. (**Corresponding Author**).

[2] **Yi Wang**, Kejun Wu, Wenyang Liu, Kim-Hui Yap, and Lap-Pui Chau, "Image Representation and Deep Inception-Attention for File-Type and Malware Classification," in *Proc. IEEE International Symposium on Circuits and Systems (ISCAS)*, 2023.

[3] Kejun Wu, **Yi Wang**, Wenyang Liu, Kim-Hui Yap, and Lap-Pui Chau, "A Spatial-Focal Error Concealment Scheme for Corrupted Focal Stack Video," in *Proc. Data Compression Conference (DCC)*, 2023.

[4] Haihan Tang, **Yi Wang**, and Lap-Pui Chau, "TAFNet: a three-stream adaptive fusion network for RGB-T crowd counting," in *IEEE International Symposium on Circuits and Systems* (ISCAS), 2022.

[5] **Yi Wang**, Xinyu Hou, and Lap-Pui Chau, "Dense point prediction: a simple baseline for crowd counting and localization," in *IEEE International Conference on Multimedia & Expo Workshops*, 2021, pp. 1-6.

[6] Nanyang Yang**, Yi Wang**, and Lap-Pui Chau, "Multi-object tracking with tracked object bounding box association," in *IEEE International Conference on Multimedia & Expo Workshops*, 2021, pp. 1-6. (**Mentored undergraduate student's work**)

[7] **Yi Wang**, Junhui Hou and Lap-Pui Chau, "Object counting in video surveillance using multi-scale density map regression," in *IEEE International Conference on Acoustics, Speech and Signal Processing*, 2019, pp. 2422-2426.

[8] **Yi Wang** and Lap-Pui Chau, "Airlight estimation based on distant region segmentation," in *IEEE International Symposium on Circuits and Systems*, 2019, pp. 1-5.

[9] Xinyu Hou, **Yi Wang**, and Lap-Pui Chau, "Vehicle tracking using deep sort with low confidence track filtering," in *IEEE International Conference on Advanced Video and Signal Based Surveillance*, 2019, pp. 1-6. (**Mentored undergraduate student's work**)

[10] **Yi Wang**, Hui Liu and Lap-Pui Chau, "Single underwater image restoration using attenuation-curve prior", in *IEEE International Symposium on Circuits and Systems*, 2017, pp. 1-4.

Patents:

[1] 梅少辉, **王熠**, 万帅, 李祎, 陶晴, 岳晓奎, "FPGA key data protection method for microsatellite(微小卫星 FPGA 关键数据保护方法)," China, CN104932954B, issued 2017-10-24.

[2] 万帅, 陶晴, 梅少辉, **王熠**, 李祎, 罗建军, "Remote image progressive transmission method and system(远程图像渐进传输方法及系统)," China, CN104967854B, issued 2018-05-18.

[3] 袁建平, 李祎, 侯建文, 万帅, 梅少辉, **王熠**, 陶晴, "Towards the micro-image capturing system of multichannel of micro-nano satellite (面向微纳星的多路微图像采集系统)," China, CN104967783B, issued 2018-01-09.

Invention/Technology Disclosure:

"Intelligent traffic surveillance via vehicle detection and tracking, fire and smoke detection, and lane marker and lane region detection," Nanyang Technological University, Oct 2020 (Second author).

PROFESSIONAL SERVICES

Membership:

2018-: IEEE Member

Associate Editor:

2023-: The Visual Computer

Reviewer:

IEEE TIP, IEEE TCSVT, IEEE TNNLS, IEEE TMM, IEEE TETCI, IEEE Trans. Broadcast., IEEE TGRS, Neurocomputing, Pattern Recognition, The Visual Computer, etc.

HONORS & SCHOLARSHIPS

2022	Excellent Prize in NPU Global Alumni "HUAQIN CUP" Innovation and Entrepreneurship Competition
2021	**Chinese Government Award for Outstanding Self-financed Students Abroad**
2015	The First Prize in northwestern area site of the Second National College Competition on Internet of Things (IoT)
2014	**The First Prize of the First National Internet of Things Design Contest (TI Cup)**
2014	The Second Prize in northwestern area site of National Graduate Electronic Design Contests
2013	**Graduate Student First Scholarship of NPU**
2012	**Merit Student & Undergraduate First Prize Scholarship of NPU**
2012	**The First Prize of the 2012 Chinese Robot and RoboCup Public Contest**
2011	The Third Prize in Shaanxi area site of the National Undergraduate Electronic Design Contest
2011	**The First Prize of the 2011 Chinese Robot and RoboCup Public Contest**

TECHNICAL SKILLS

Programming Languages: C, Python, Matlab, Verilog HDL

Machine Learning Tools: Pytorch, TensorFlow, Keras

Hardware Development Tools: Embedded system (ARM, FPGA, DSP), PCB design