

Chih-Ting (Jackie) Liu 劉致廷

Computer Vision Applied Scientist

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Research Interests

Person Re-Identification, Federated Learning for Recognition, Neural Network Pruning

Education

- **National Taiwan University (NTU)** Taipei, Taiwan
Ph.D. degree in Graduate Institute of Electronics Engineering (GIEE) Sep.2017 – Jul.2022
Advisor : Prof. Shao-Yi Chien
- **National Taiwan University (NTU)** Taipei, Taiwan
B.S. degree in Department of Electrical Engineering (EE) Sep.2013 - Jun.2017

Industry Experience

- **Applied Scientist, Lab126, Amazon Corp** Taipei, Taiwan
Develop cutting-edge computer vision features for Amazon and Ring devices. Aug. 2022 - present
- **Research Intern, AI R&D Center, Microsoft Corp, Supervisor: Prof. Shang-Hong Lai** Taipei, Taiwan
Develop an end-to-end federated learning face recognition framework that can jointly improve generic face representation and personalized user experience. Mar. 2021 - Sep.2021
- **Research Intern, IVP Department, MediaTek Corp, Supervisor: Dr. Yu-Lin Chang** Hsinchu, Taiwan
Develop one-stage real-time multi-object tracking system that integrate detection and tracking into one network. Mar. 2020 - Sep.2020
- **Research Intern, VCP Department, MediaTek Corp, Supervisor: Dr. Yu-Wen Huang** Hsinchu, Taiwan
Develop deep learning-based technique for next generation Video Coding algorithm. Jul. 2017 - Sep.2017
Improve Coding Unit (CU) split decision with Convolution Neural Network.

Publications (*equal contribution)

- **FedFR: Joint Optimization Federated Framework for Generic and Personalized Face Recognition**
Chih-Ting Liu*, Chien-Yi Wang*, Shao-Yi Chien, Shang-Hong Lai
Proceedings of the AAAI Conference on Artificial Intelligence (AAAI), 2022.
- **Hard Samples Rectification for Unsupervised Cross-domain Person Re-identification**
Chih-Ting Liu*, Man-Yu Lee*, Tsai-Shien Chen, Shao-Yi Chien
IEEE International Conference on Image Processing (ICIP), 2021
- **Video-based Re-identification without Bells and Whistles**
Chih-Ting Liu, Jung-Chen Chen, Chu-Song Chen, Shao-Yi Chien
IEEE Conference on Computer Vision and Pattern Recognition Workshop (CVPRW), 2020
- **Semantics-Guided Clustering with Deep Progressive Learning for Semi-Supervised Person Re-identification**
Chih-Ting Liu, Yu-Che Li, Shao-Yi Chien, Yu-Chiang Frank Wang
arXiv preprint, 2020
- **Orientation-aware Vehicle Re-identification with Semantics-guided Part Attention Network**
Tsai-Shien Chen, Chih-Ting Liu, Chih-Wei Wu, Shao-Yi Chien
European Conference on Computer Vision (ECCV), Oral paper, 2020
- **Space-Time Guided Association Learning For Unsupervised Person Re-Identification**
Chih-Wei Wu, Chih-Ting Liu, Wei-Chih Tu, Yu Tsao, Yu-Chiang Frank Wang, Shao-Yi Chien
IEEE International Conference on Image Processing (ICIP), 2020
- **Constraint-Aware Importance Estimation for Global Filter Pruning under Multiple Resource Constraints**
Yu-Cheng Wu, Chih-Ting Liu, Bo-Ying Chen, Shao-Yi Chien
IEEE Conference on Computer Vision and Pattern Recognition Workshop (CVPRW), 2020

- **Spatially and Temporally Efficient Non-local Attention Network for Video-based Person Re-Identification**
Chih-Ting Liu, Chih-Wei Wu, Yu-Chiang Frank Wang, Shao-Yi Chien
British Machine Vision Conference (BMVC), 2019
- **Supervised Joint Domain Learning for Vehicle Re-Identification**
Chih-Ting Liu*, Man-Yu Lee*, Chih-Wei Wu*, Yao-Ting Hsu, Tsai-Shien Chen, Bo-Ying Chen, Shao-Yi Chien
IEEE Conference on Computer Vision and Pattern Recognition Workshop (CVPRW), 2019
- **Computation-Performance Optimization of Convolutional Neural Networks with Redundant Filter Removal**
Chih-Ting Liu, Tung-Wei Lin, Yi-Heng Wu, Yu-Sheng Lin, Heng Lee, Yu Tsao, Shao-Yi Chien
IEEE Transactions on Circuits and Systems I: Regular Papers (TCAS-I), 2019
- **Vehicle Re-Identification with the Space-Time Prior**
Chih-Wei Wu, **Chih-Ting Liu**, Cheng-En Chiang, Wei-Chih Tu, Shao-Yi Chien
IEEE Conference on Computer Vision and Pattern Recognition Workshop (CVPRW), 2018
- **Computation-Performance Optimization of Convolutional Neural Networks with Redundant Kernel Removal**
Chih-Ting Liu, Yi-Heng Wu, Yu-Sheng Lin, Shao-Yi Chien
IEEE International Symposium on Circuits and Systems (ISCAS), 2018

Research Experience

Graduate Research – Person / Vehicle Multi-Camera Tracking System

Sep.2017 - Present

Advised by Prof. Shao-Yi Chien

- Design **efficient and accurate** video person re-identification (**Re-ID**) algorithms in a multi-camera system.
- Design **Semi-/Un-supervised** method for the real world purpose.
- Integrate **detection, single-camera tracking, and multi-camera matching** into a multi-camera system.
- Participate Nvidia AI City Challenge (2018-2022)

Graduate Research – Computation Optimization for Deep Learning Model

Sep.2016 - Present

Advised by Prof. Shao-Yi Chien

- Explore the **redundancy of filters** globally or locally in Convolutional Neural Networks (CNN).
- Design useful pruning technique under the **hardware constraints** to remove unnecessary filters.

Honors & Awards

- Selected as an oral paper in 2022 AAAI Conference on Artificial Intelligence (AAAI). Feb. 2022
- Selected as an oral paper in 2020 European Conference on Computer Vision (ECCV). Aug. 2020
- Won **2nd** place in 2018 NVIDIA AI City Challenge (CVPR Workshop) Track 3, in Salt Lake City, U.S.A. with the acceptance of our paper "Vehicle Re-Identification with the Space-Time Prior". Apr. 2018
- Won **2nd** place in 2018 "Deep Learning for Computer Vision" course final project contest in NTU, which is sponsored by MultiTek Corp. Jun. 2018

Teaching Experience

- Teaching Assistant & Lecturer of **Computer Vision**, NTU. (Fall 2019, Spring 2021, Spring 2022)
- Teaching Assistant of **Deep Learning for Computer Vision**, NTU. (Spring 2019)
- Teaching Assistant of **Machine Learning**, NTU. (Spring 2018)
- Lecturer of **Media IC & System Lab Crash Courses for New Members** [[link](#)], NTU. (Summer 2018-2021)

Reviewer Experience

- IEEE Conference on Computer Vision and Pattern Recognition, 2019-2022
- AAAI Conference on Artificial Intelligence, 2020-2023
- British Machine Vision Conference, 2020-2022
- International Conference on Computer Vision, 2021

Technical Skills

- Programming : Python, C++
- Toolbox / Software: Pytorch, Torch , Git, LinuxOS

Relevant Coursework

- Machine Learning (A+) , Machine Learning and have it Deep and Structured (A+)
- Computer Vision (A+), Deep Learning for Computer Vision (A+)
- Data Structure and Programming (A+), Algorithm (A+), Computer Architecture (A+)

Reference

Shao-Yi Chien, Professor, National Taiwan University, Taiwan

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