

# Chih-Ting (Jackie) Liu

Computer Science / Electrical Engineering Researcher

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*"Stay hungry. Stay foolish."* -- Steve Jobs

## Research Interests

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Person / Vehicle Re-Identification, Multi-Camera Tracking, Neural Network Pruning

## Education

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- **National Taiwan University (NTU)** Taipei, Taiwan  
Ph.D. student in Graduate Institute of Electronics Engineering (GIEE) Feb.2019 - Present  
Advisor : Prof. Shao-Yi Chien
- **National Taiwan University (NTU)** Taipei, Taiwan  
M.S. degree in Graduate Institute of Electronics Engineering (GIEE) Sep.2017 - Jan.2019  
Advisor : Prof. Shao-Yi Chien
- **National Taiwan University (NTU)** Taipei, Taiwan  
B.S. degree in Department of Electrical Engineering (EE) Sep.2013 - Jun.2017

## Publications

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- **Semantics-Guided Clustering with Deep Progressive Learning for Semi-Supervised Person Re-identification**  
Submitted to Asian Conference on Computer Vision (ACCV), 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  
(\*denotes equal contributions)  
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

## Honors & Awards

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- Won **2<sup>nd</sup>** 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 **2<sup>nd</sup>** place in 2018 “Deep Learning for Computer Vision” course final project contest in NTU, which is sponsored by MultiTek Corp. *Jun. 2018*

## Industry Experience

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- **Intern**, Intelligent Vision Processing Department, **MediaTek Corp.** *Hsinchu, Taiwan*  
Develop one-stage real-time multi-object tracking system *Mar. 2020 - Jul. 2020*
- **Intern**, Video Coding Processing Department, **MediaTek Corp.** *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.
- **Intern**, Commercial Client Department, **Taiwan Dell Center (TDC)** *Taipei, Taiwan*  
Develop Toolkit for Circuit Layout Netlist Comparison. *Jul. 2016 - Aug. 2016*  
Utilize python GUI package to design Netlist comparison algorithm for complicated circuit layout.

## Technical Skills

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

## Teaching Experience

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- Teaching Assistant & Lecturer of **Computer Vision**, NTU. (Fall 2019)
- 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 2018-2020)

## Research Experience

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### 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.

### 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.

## Relevant Coursework

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- 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

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**Shao-Yi Chien**, Professor, National Taiwan University, Taiwan  
E-mail: [sychien@ntu.edu.tw](mailto:sychien@ntu.edu.tw)