Chih-Ting (Jackie) Liu

Computer Science / Electrical Engineering Researcher

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

Research Interests

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

Education

- **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

- **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

- 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*

Industry Experience

- **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

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

Teaching Experience

- **Machine Learning**, Teaching Assistant, NTU. (Spring 2018)
- **Deep Learning for Computer Vision**, Teaching Assistant, NTU. (Spring 2019)
- **Computer Vision**, Teaching Assistant, NTU. (Fall 2019)
- **Media IC & System Lab Crash Courses for New Members** [link], Lecturer, NTU. (Summer 2018-2020)

Research Experience

Graduate Research – Human/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

- 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
E-mail: sychien@ntu.edu.tw