

# Jialian Wu

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## Education

### Ph.D. Candidate, State University of New York at Buffalo

08/2019–Present

- Computer Science and Engineering
- Advisor: Dr. [Junsong Yuan](#)

### Graduate Study, Tianjin University

09/2018–07/2019

- M.Eng. in Electronic Information Engineering
- Advisor: Dr. [Yanwei Pang](#)

(Left for University at Buffalo in July 2019 before finishing my degree)

### Bachelor of Engineering, Tianjin University

09/2014–07/2018

- Electronic Information Engineering
- GPA: 3.85/4.0 (90.94/100)
- Rank: 5/84
- Thesis: Multi-level Feature Fusion Network for Object Detection. (Outstanding Bachelor Thesis)

**Research Interest:** Object-centric video analysis including detection, segmentation, and tracking. I am also open to explore other interesting research topics in computer vision field.

## Publications

### First-Author Papers:

- **Multi-Object Tracking:** We propose a TraDeS tracker that exploits tracking cues estimated from a cost volume map to temporally propagate object features for enhancing current object recognition.
  - **Jialian Wu**, Jiale Cao, Liangchen Song, Yu Wang, Ming Yang, and Junsong Yuan, “Track to Detect and Segment: An Online Multi-Object Tracker”, in *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2021. [\[Project Page\]](#) [\[PDF\]](#) [\[Code\]](#)
- **Extension of the Forest R-CNN.**
  - **Jialian Wu**, Liangchen Song, Qian Zhang, Ming Yang, and Junsong Yuan, “ForestDet: Large-Vocabulary Long-Tailed Object Detection and Instance Segmentation”, *IEEE Transactions on Multimedia (TMM)*, 2021. [\[PDF\]](#) [\[Code\]](#)
- **Occluded Pedestrian Detection in Videos:** We propose to exploit less-occluded pedestrians from adjacent spatial-temporal space to aid the detection of heavily occluded pedestrians in current frame.
  - **Jialian Wu**, Chunluan Zhou, Ming Yang, Qian Zhang, Yuan Li, and Junsong Yuan, “Temporal-Context Enhanced Detection of Heavily Occluded Pedestrians”, in *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2020. [\[PDF\]](#)
- **Large-Vocabulary and Long-tailed Object Detection:** We propose to build a forest classifier based on object relations, which can suppress the noisy logits existed in a fine-grained classifier.
  - **Jialian Wu**, Liangchen Song, Tiancai Wang, Qian Zhang, and Junsong Yuan, “Forest R-CNN: Large-Vocabulary Long-Tailed Object Detection and Instance Segmentation”, in *Proceedings of the ACM International Conference on Multimedia (ACM MM)*, 2020. [\[PDF\]](#) [\[Code\]](#)
- **Small-scale Pedestrian Detection:** We propose to utilize the features of large-scale pedestrians from the same neural network to help the feature learning of the small-scale pedestrians.
  - **Jialian Wu**, Chunluan Zhou, Qian Zhang, Ming Yang, and Junsong Yuan, “Self-Mimic Learning for Small-scale Pedestrian Detection”, in *Proceedings of the ACM International Conference on*

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*Multimedia* (ACM MM), 2020. [\[PDF\]](#)

## Second-author Papers:

### ➤ *Multi-View Pedestrian Detection*

● Liangchen Song, **Jialian Wu**, Ming Yang, Qian Zhang, Yuan Li, and Junsong Yuan, “Stacked Homography Transformations for Multi-View Pedestrian Detection”, in *Proceedings of the IEEE International Conference on Computer Vision (ICCV)*, 2021. (Oral)

### ➤ *Multi-label image classification*

● Liangchen Song, **Jialian Wu**, Ming Yang, Qian Zhang, Yuan Li, and Junsong Yuan, “Handling Difficult Labels for Multi-label Image Classification via Uncertainty Distillation”, in *Proceedings of the ACM International Conference on Multimedia (ACM MM)*, 2021.

### ➤ *Knowledge Transferring*: We propose a hybrid network forwarding scheme to transfer the knowledge encoded in a teacher network to a student network.

● Liangchen Song, **Jialian Wu**, Ming Yang, Qian Zhang, Yuan Li, and Junsong Yuan, “Robust Knowledge Transfer via Hybrid Forward on the Teacher-Student Model”, in *Proceedings of the AAAI Conference on Artificial Intelligence (AAAI)*, 2021. [\[PDF\]](#)

## Industry Research Experience

**Applied Scientist Intern, Amazon, Seattle, WA, USA**

May – August, 2021

Amazon Go Team, Mentor: Dr. [Tian Lan](#)

**Research Intern, Horizon Robotics, Silicon Valley, CA, USA**

May – August, 2020

Autonomous Driving Perception Team, Mentor: Dr. [Yu Wang](#)

- Propose an online multi-object tracker, TraDeS (accepted to CVPR 2021). TraDeS is able to perform 2D box tracking, 3D box tracking, and instance segmentation tracking in real-time. TraDeS achieves state-of-the-art tracking performance on various benchmarks, including Nuscenes (3D box tracking), MOT (2D box tracking), MOTS and Youtube-VIS (instance segmentation tracking).

**Research Intern, Horizon Robotics, Beijing, China**

May – September, 2018

Mentor: Dr. [Qian Zhang](#)

- Propose a Self-Mimic Learning method (accepted to ACM MM 2020) for detecting small-scale pedestrians. SML achieves the top-1 result on the CityPersons dataset.

## Other Projects

**Alibaba Cloud Tianchi Competition**

April – May, 2019

- Rank 30th / 2157 teams in China and 1st / 44 teams in Tianjin City.
- Achieve object detection and segmentation in X-ray images.

**Object Detection for Autonomous Driving Ship, TJU Vision Intelligence Lab**

March – May, 2018

- Complete dataset building (images & annotations), algorithm implementation, and interface design.

**National Innovation Project for Undergraduate Students**

March – May, 2017

- Achieve pedestrian detection in foggy weather by using the traditional hog+svm detector with a hard example mining scheme.

## Awards

- [Best CSE First Year Achiever Award](#), State University of New York at Buffalo, 2020.
- Outstanding Bachelor Thesis, Tianjin University, 2018.

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- First-class Entrance Fellowship, Tianjin University, 2018.
- Tianjin City Fellowship, 2016.
- Merit Student Fellowship, Tianjin University, 2017, 2016, 2015.

## **Professional Services**

### **Reviewer:**

- Conferences: CVPR 2020/2021([outstanding reviewer](#))/2022, ICCV 2021, AAAI 2021/2022, IJCAI 2021, WACV 2021/2022, ICASSP 2021, ACCV 2020
- Journals: IEEE Transactions on Image Processing, IEEE Transactions on Circuits and Systems for Video Technology

### **Teaching Assistant:**

- CSE573: Computer Vision and Image Processing, Fall 2019.
- CSE191: Discrete Structures, Spring 2020.