**Education**

**Ph.D. Candidate, State University of New York at Buffalo** 08/2019–Present

* Computer Science and Engineering
* Advisor: Dr. [Junsong Yuan](https://cse.buffalo.edu/~jsyuan/index.html)

**Graduate Study, Tianjin University** 09/2018–07/2019

* M.Eng. in Electronic Information Engineering
* Advisor: Dr. [Yanwei Pang](https://scholar.google.com.hk/citations?user=dE-2UtsAAAAJ&hl=zh-CN)

(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]](https://jialianwu.com/projects/TraDeS.html) [[PDF]](https://openaccess.thecvf.com/content/CVPR2021/papers/Wu_Track_To_Detect_and_Segment_An_Online_Multi-Object_Tracker_CVPR_2021_paper.pdf) [[Code]](https://github.com/JialianW/TraDeS)

* ***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]](https://arxiv.org/pdf/2008.05676.pdf) [[Code]](https://github.com/JialianW/Forest_RCNN)

* ***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]](https://openaccess.thecvf.com/content_CVPR_2020/papers/Wu_Temporal-Context_Enhanced_Detection_of_Heavily_Occluded_Pedestrians_CVPR_2020_paper.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]](https://arxiv.org/pdf/2008.05676.pdf) [[Code]](https://github.com/JialianW/Forest_RCNN)

* ***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 Multimedia* (ACM MM), 2020. [[PDF]](https://cse.buffalo.edu/~jsyuan/papers/2020/SML.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]](https://jialianwu.com/papers/aaai21.pdf)

**Industry Research Experience**

**Applied Scientist Intern, Amazon, Seattle, WA, USA** May – August, 2021

Amazon Go Team, Mentor: Dr. [Tian Lan](https://cs.stanford.edu/~taranlan/)

**Research Intern, Horizon Robotics, Silicon Valley, CA, USA** May – August, 2020

Autonomous Driving Perception Team, Mentor: Dr. [Yu Wang](https://scholar.google.com/citations?user=uNj2w9gAAAAJ&hl=en)

* 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](https://scholar.google.com/citations?user=pCY-bikAAAAJ&hl=zh-CN)

* 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](https://engineering.buffalo.edu/computer-science-engineering/people/hall-of-fame/graduate-student-award-recipients.html), State University of New York at Buffalo, 2020.
* Outstanding Bachelor Thesis, Tianjin University, 2018.
* 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](http://cvpr2021.thecvf.com/node/184))/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.