

Yen-Cheng Liu

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Education	Georgia Tech , Atlanta, GA <i>Ph.D. student</i> , Machine Learning, <i>GPA: 4.00/4.00</i>	Aug. 2018 - Present
	National Taiwan University , Taipei, Taiwan <i>M.S.</i> , Electrical Engineering, <i>GPA: 4.19/4.30</i>	Sep. 2015 - June 2017
	National Chiao Tung University , Hsinchu, Taiwan <i>B.S.</i> , Electrical and Computer Engineering, <i>GPA: 4.24/4.30</i>	Sep. 2011 - June 2015
Research Summary	Machine learning (ML) applications require huge foundation models trained on vast data and labels . My research focuses on improving the efficiency of model parameters, data, and label annotations in training of large-scale machine learning models. Beyond these, I also worked on efficient and robust inference , which exploits communication techniques to exchange information across different ML models.	
Experience	Meta Research <i>Research Intern</i>	May 2022 - Dec. 2022
	Collaborators: Kunpeng Li, Xiaoliang Dai, Chih-Yao Ma, Zijian He, Peter Vajda	
	<ul style="list-style-type: none">• Developing parameter-efficient multi-task adaptation of foundation models [NeurIPS'22]• Reducing 90% trainable parameters while maintaining multi-task accuracy gains	
	Facebook Research <i>Research Intern</i>	May 2021 - Dec. 2021
	Collaborators: Xiaoliang Dai, Chih-Yao Ma, Zijian He, Ross Girshick	
	<ul style="list-style-type: none">• Improving object detectors with large-scale <i>unconstrained</i> unlabeled images [ECCV'22]• Improving object localization in semi-supervised manner with SoTA results [CVPR'22]	
	Facebook Research <i>Research Intern</i>	May 2020 - Aug. 2020
	Collaborators: Chih-Yao Ma, Zijian He, Peizhao Zhang, Kan Chen, Peter Vajda	
	<ul style="list-style-type: none">• Reducing label annotations for training object detectors and achieving SoTA results in semi-supervised object detection [ICLR'21]• Being applied to several Meta's products	
	Georgia Tech <i>Graduate Research Assistant</i>	Aug. 2018 - Present
	Advisor: Prof. Zsolt Kira	
	<ul style="list-style-type: none">• Developing machine learning techniques under limited supervision (<i>e.g.</i>, few-shot learning, semi-supervised learning, etc.) [ICLR'19, ICLR'21, CVPR'22, ECCV'22]• Initiating a new research area focused on multi-agent collaborative perception [ICRA'20, CVPR'20, IROS'21]• Investigating and benchmarking on continual learning [NeurIPS'18]	
	National Taiwan University <i>Research Assistant</i>	July 2016 - July 2018
	Advisor: Prof. Yu-Chiang Frank Wang	
	<ul style="list-style-type: none">• Applying generative ML models to address domain adaptation problems [CVPR'18, NeurIPS'18]• Improving depth estimation accuracy with aid of semantic priors [CVPR'19]• Investigating and benchmarking on few-shot classification [ICLR'19]	

**Selected
Publications**

- [1] J. Tian, X. Dai, C.-Y. Ma, Z. He, **Y.-C. Liu**, Zolt Kira. Trainable Projected Gradient Method for Robust Fine-Tuning, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2023
- [2] **Y.-C. Liu**, C.-Y. Ma, Z. He, Z. Kira. Polyhistor: Parameter-Efficient Multi-Task Adaptation for Dense Vision Tasks, *Conference on Neural Information Processing Systems (NeurIPS)*, 2022
- [3] **Y.-C. Liu**, C.-Y. Ma, X. Dai, J. Tian, P. Vajda, Z. He, Z. Kira. Open-set Semi-Supervised Object Detection, *European Conference on Computer Vision (ECCV)*, 2022 **(Oral)**
- [4] **Y.-C. Liu**, C.-Y. Ma, Z. Kira. Unbiased Teacher v2: Semi-supervised Object Detection for Anchor-free and Anchor-based Detectors, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022
- [5] **Y.-C. Liu**, C.-Y. Ma, Z. He, C.-W. Kuo, K. Chen, P. Zhang, B. Wu, Z. Kira, P. Vajda. Unbiased Teacher for Semi-Supervised Object Detection, *International Conference on Learning Representations (ICLR)*, 2021
- [6] N. Glaser, **Y.-C. Liu**, J. Tian, Z. Kira Overcoming Obstructions via Bandwidth-Limited Multi-Agent Spatial Handshaking, *International Conference on Intelligent Robots and Systems (IROS)*, 2021
- [7] J. Tian, **Y.-C. Liu**, N. Glaser, Y.-C. Hsu, Z. Kira. Posterior Re-calibration for Imbalanced Datasets, *Conference on Neural Information Processing Systems (NeurIPS)*, 2020
- [8] **Y.-C. Liu**, J. Tian, N. Glaser, Z. Kira. When2com: Multi-Agent Collaborative Perception via Communication Graph Grouping, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2020
- [9] **Y.-C. Liu**, J. Tian, C.-Y. Ma, N. Glaser, C.-W. Kuo, Z. Kira. Who2com: Collaborative Perception via Learnable Handshake communication, *International Conference on Robotics and Automation (ICRA)*, 2020
- [10] J. Tian, W. Chung, N. Glaser, **Y.-C. Liu**, Z. Kira. UNO: Uncertainty-aware Noisy-Or Multimodal Fusion for Unanticipated Input Degradation, *International Conference on Robotics and Automation (ICRA)*, 2020
- [11] P.-Y. Chen*, A. Liu*, **Y.-C. Liu**, Y.-C. F. Wang. Towards Scene Understanding: Unsupervised Monocular Depth Estimation with Semantic-aware Representation , *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2019 **(Oral;** * equal contributions)
- [12] W.-Y. Chen, **Y.-C. Liu**, Z. Kira, Y.-C. F. Wang, J.-B. Huang. A Closer Look at Few-shot Classification, *International Conference on Learning Representations (ICLR)*, 2019
- [13] A. Liu, **Y.-C. Liu**, Y.-Y Yeh, Y.-C. F. Wang. A Unified Feature Disentangler for Multi-Domain Image Translation and Manipulation, *Conference on Neural Information Processing Systems (NeurIPS)*, 2018
- [14] **Y.-C. Liu**, Y.-Y Yeh, T.-C. Fu, S.-D. Wang, W.-C. Chiu, Y.-C. F. Wang. Detach and Adapt: Learning Cross-Domain Disentangled Deep Representation, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2018 **(Spotlight)**

[15] J. Tian, W. Cheung, N. Glaser, **Y.-C. Liu**, Z. Kira. UNO: Uncertainty-aware Noisy-Or Multimodal Fusion for Unanticipated Input Degradation, *International Conference on Intelligent Robots and Systems (IROS Workshops)*, 2019

[16] Y.C. Hsu, **Y.-C. Liu**, Z. Kira. Re-evaluating Continual Learning Scenarios: A Categorization and Case for Strong Baselines, *Conference on Neural Information Processing Systems Workshops(NeurIPS Workshops)*, 2018

**Academic
Services**

Reviewer: CVPR 2019-22, ICCV 2019-21, AAAI 2020, ECCV 2020, NeurIPS 2020-22, ICLR 2021-23, ICML 2021-22, PAMI, IJCV