

Yuan-Hong Liao

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Research Interests

Multi-modality: 1) Developing agentic workflows to enable self-correction and 2) managing visual uncertainty to improve reasoning in large vision-language models.

Data: Post-hoc approaches to enhance label quality. Large-scale synthetic data generation.

Education

University of Toronto

Sept 2019 – July 2025

Ph.D. in Computer Science

- Supervisor: [Professor Sanja Fidler](#) 🔗
- Ph.D. thesis: Enhancing Vision Model Predictions with Better Data and Inference.

National Tsing-Hua University

Sept 2013 – June 2017

B.S. in Electrical Engineering

- Supervisor: [Professor Min Sun](#) 🔗
- Multi-modal research including image/video captioning

Experience

Applied Scientist Intern

Bellevue, WA

Amazon Lab 126

July 2024 – Oct 2024

- In-context learning and parameter-efficient fine-tuning in multimodal-LLMs.

Research Scientist Intern

Toronto, ON

Nvidia

June 2022 – May 2023

- Two papers in object detection transfer learning, [CARE](#) 🔗 in TMLR'23 and [LabelTransfer](#) 🔗 in ICLR'24.
- Organized and presented a company-wide seminar on image data labeling.

Publications

LongPerceptualThoughts: Distilling System-2 Reasoning for System-1 Perception

In submission

Yuan-Hong Liao, Sven Elflein, Liu He, Laura Leal-Taixé, Yejin Choi, Sanja Fidler, and David Acuna

Can Large Vision-Language Models Correct Semantic Grounding Errors By Themselves?

CVPR 2025

Yuan-Hong Liao, Rafid Mahmood, Sanja Fidler, and David Acuna

Reasoning Paths with Reference Objects Elicit Quantitative Spatial Reasoning in Large Vision-Language Models

EMNLP 2024

Yuan-Hong Liao, Rafid Mahmood, Sanja Fidler, and David Acuna

Translating Labels to Solve Annotation Mismatches Across Object Detection Datasets

ICLR 2024

Yuan-Hong Liao, David Acuna, Rafid Mahmood, James Lucas, Viraj Prabhu, and Sanja Fidler

Bridging the Sim2Real gap with CARE, Supervised Detection Adaptation with Conditional Alignment and Reweighting

TMLR 2023

Viraj Prabhu, David Acuna, Rafid Mahmood, James Lucas, *Yuan-Hong Liao*, Judy Hoffman, Sanja Fidler, and James Lucas

LA-BALD: An Information-Theoretic Image Labeling Task Sampler

arXiv 2022

Yuan-Hong Liao and Sanja Fidler

Towards Good Practices for Efficiently Annotating Large-Scale Image Classification Datasets	CVPR2021 Oral
<i>Yuan-Hong Liao</i> , Amlan Kar, and Sanja Fidler	
Emergent Road Rules in Multi-Agent Driving Environments	ICLR 2021
Avik Pal, Jonah Philion, <i>Yuan-Hong Liao</i> , and Sanja Fidler	
Watch-and-Help: A Challenge for Social Perception and Human-AI Collaboration	ICLR 2021
Xavier Puig, Tiamin Shu, Shuang Li, Zilin Wang, <i>Yuan-Hong Liao</i> , Josha Tenenbaum, Sanja Fidler, and Antonio Torralba	
Synthesizing Environment-Aware Activities via Activity Sketches	CVPR 2019
<i>Yuan-Hong Liao</i> [*] , Xavier Puig [*] , Marko Boben, Antonio Torralba, and Sanja Fidler	
Show, adapt and tell: Adversarial training of cross-domain image captioner	ICCV 2017
Tseng-Hung Chen, <i>Yuan-Hong Liao</i> , Ching-Yao Chuang, Wan-Ting Hsu, Jianlong Fu, and Min Sun	
Tactics of adversarial attack on deep reinforcement learning agents	IJCAI 2017
Yen-Chen Lin, Zhang-Wei Hong, <i>Yuan-Hong Liao</i> , Meng-Li Shih, Ming-Yu Liu, and Min Sun	
Leveraging video descriptions to learn video question answering	AAAI 2017
Kuo-Hao Zeng, ZTseng-Hung Chen, Ching-Yao Chuang, <i>Yuan-Hong Liao</i> , Juan Carlos Niebles, and Min Sun	

Open-source Projects

OpenAI baselines github.com/openai/baselines 

- Major contributor to the algorithm “Generative Adversarial Imitation Learning”. See contributions at [here](#) .

Academic Services and Teaching

Reviewers at top-tier conferences

ICLR (2022, 2024, 2025), NeurIPS (2021-2024), ICML (2025), CVPR (2025), and AAAI (2025)

TA in Neural Networks and Deep Learning

CSC413/2516 Winter 2020

University of Toronto

TA in The Cutting-Edge of Deep Learning

Fall 2017

National Tsing-Hua University

TA in Signal and System

Spring 2017

National Tsing-Hua University