

# Yuan-Hong Liao

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## Research Interests

**Vision-Language Models:** Advancing visual reasoning by addressing visual uncertainty, designing inference-time workflows, and generating synthetic data to support multimodal understanding.

**Data:** Post-hoc methods to improve label quality and address semantic inconsistencies in large-scale datasets.

## Education

### University of Toronto

Sept 2019 – Aug 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

COLM 2025

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

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

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**OpenAI baselines** [github.com/openai/baselines](https://github.com/openai/baselines) 

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

## Academic Services and Teaching

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### Reviewers at top-tier conferences

ICLR (2022, 2024, 2025), NeurIPS (2021-2025), ICML (2025), CVPR (2025), ICCV (2025), EMNLP (2024), 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