Yuan-Hong Liao

Toronto, Canada andrew@cs.toronto.edu https://andrewliao11.github.io andrewliao11

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 – 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 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

Towards Good Practices for Efficiently Annotating Large-Scale Image Classification Datasets CVPR2021 Oral

Yuan-Hong Liao, Amlan Kar, and Sanja Fidler

Emergent Road Rules in Multi-Agent Driving Environments ICLR 2021

Avik Pal, Jonah Philion, *Yuan-Hong Liao*, 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, *Yuan-Hong Liao*, Josha Tenenbaum, Sanja Fidler, and Antonio Torralba

Synthesizing Environment-Aware Activities via Activity Sketches CVPR 2019

*Yuan-Hong Liao**, 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, *Yuan-Hong Liao*, 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, *Yuan-Hong Liao*, 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, *Yuan-Hong Liao*, 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 (2021-2025), 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