

Tz-Ying (Gina) Wu

Education

- Sep. 2018 - **University of California San Diego (UCSD)**, La Jolla, CA.
Jun. 2024 Ph.D. in Electrical Computer Engineering
Advisor: Professor Nuno Vasconcelos
- Feb. 2016 - **National Tsing Hua University (NTHU)**, Hsinchu, Taiwan.
Jan. 2018 M.S. in Electrical Engineering, GPA: 4.27/4.3
Advisor: Professor Min Sun
- Sep. 2012 - **National Tsing Hua University (NTHU)**, Hsinchu, Taiwan.
Jan. 2016 B.S. in Electrical Engineering, GPA: 4.02/4.3, Ranking: 10/99 (graduated a half-year earlier)

Research Interest

Deep Learning & Computer Vision: Publication in top-tier conferences across broad topics, including visual-language model, model robustness, video/scene understanding, and continual learning

Publications

- 2024 **Tz-Ying Wu***, Chih-Hui Ho*, Nuno Vasconcelos, "ProTeCt: Prompt Tuning for Taxonomic Open Set Classification", In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2024 [Paper]
- 2022 Alakh Desai, **Tz-Ying Wu**, Subarna Tripathi, Nuno Vasconcelos, "Single-Stage Visual Relationship Learning using Conditional Queries", In *Advances in Neural Information Processing Systems (NeurIPS)*, 2022 [Paper]
- 2022 **Tz-Ying Wu**, Gurumurthy Swaminathan, Zhizhong Li, Avinash Ravichandran, Nuno Vasconcelos, Rahul Bhotika, Stefano Soatto, "Class-Incremental Learning with Strong Pre-trained Models", In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022 [Paper]
- 2021 **Tz-Ying Wu***, Alakh Desai*, Subarna Tripathi, Nuno Vasconcelos, "Learning of Visual Relations: The Devil is in the Tails", In *IEEE International Conference on Computer Vision (ICCV)*, 2021 [Paper]
- 2020 **Tz-Ying Wu**, Pedro Morgado, Pei Wang, Chih-Hui Ho, Nuno Vasconcelos, "Solving Long-tailed Recognition with Deep Realistic Taxonomic Classifier", In *European Conference on Computer Vision (ECCV)*, 2020 [Paper]
- 2020 Yiran Xu, Xiaoyin Yang, Lihang Gong, Hsuan-Chu Lin, **Tz-Ying Wu**, Yungsheng Li, Nuno Vasconcelos, "Explainable Object-induced Action Decision for Autonomous Vehicles", In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2020 [Paper]
- 2020 Chih-Hui Ho, Bo Liu, **Tz-Ying Wu**, Nuno Vasconcelos, "Exploit Clues from Views: Self-Supervised and Regularized Learning for Multiview Object Recognition", In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2020 [Paper]
- 2018 **Tz-Ying Wu***, Juan-Ting Lin*, Tsun-Hsuang Wang, Chan-Wei Hu, Juan Carlos Niebles, Min Sun, "Liquid Pouring Monitoring via Rich Sensory Inputs", In *European Conference on Computer Vision (ECCV)*, 2018 [Paper]

- 2017 **Tz-Ying Wu***, Ting-An Chien*, Cheng-Sheng Chan, Chan-Wei Hu, Min Sun, "Anticipating Daily Intention using On-Wrist Motion Triggered Sensing", In *IEEE International Conference on Computer Vision (ICCV)*, **Spotlight**, 2017 [Paper]

Demos

- 2016 Cheng-Sheng Chan, Ting-An Chien, **Tz-Ying Wu**, Min Sun, "Recognition from Hand Cameras: A Revisit with Deep Learning", In *Asian Conference on Computer Vision*, 2016 [Demo1, Demo2]

Skills

Programming	Python, C/C++, MATLAB, Verilog, Assembly, HTML, \LaTeX
Library	PyTorch, Tensorflow, Keras, Gradio, OpenCV, Scikit-learn, Numpy, Scipy, Pandas, Matplotlib
System&Tool	Linux, Git, Kubernetes, AWS, Azure, Docker
Language	Mandarin, English

Work Experience

- Aug. 2024 - present **AI Research Scientist**, *Intel AI Lab*.
 - Working on video understanding and analysis research with large foundation models.
- Jun. 2023 - **Machine Learning Research Intern**, *Intel AI Lab*.
- Mar. 2024
 - Conducted research on efficient adaptation methods for video foundation models.
 - The proposed method can achieve fine-tuning performance by tuning < 1% model parameters.
 - Developed live demos on the HuggingFace platform.
- Jun. 2021 - **Applied Scientist Intern**, *Amazon AWS AI Lab*.
- Sep. 2021
 - Conducted research on large-scale class-incremental learning problems.
 - Published a paper at the CVPR 2022 conference.
- Jul. 2015 - **Signal Processing Intern**, *IMEC-Taiwan CO. R&D department*.
- Aug. 2015
 - Designed and implemented neuron-signal generator, encoder, and decoder framework (Python/C++).
 - Improved the real-time decoding speed by at least 2 times.

Research Experience

- Jan. 2018 - **Graduate Student Researcher**, *Statistical Visual Computing Lab, UCSD*.
- Jun. 2024
 - Worked on long-tailed recognition, continual learning, and scene understanding problems.
 - Focused on generating reliable predictions and adapting to continually changing distributions.
 - Published 7 papers in top-tier venues, including the release of the *BDD-OIA* dataset.
- Feb. 2016 - **Graduate Research Assistant**, *Vision Science Lab, NTHU*.
- Jan. 2018
 - Developed wearable camera and IOT system with Raspberry Pi embedded boards.
 - Conducted deep learning experiments for learning human behaviors using multi-modal fusion.
 - Published 2 papers in top-tier venues, including the release of the *Daily Intention* dataset.
- Sep. 2014 - **Undergraduate Research**, *advised by Prof. Jing-Jia Liou, NTHU*.
- Jun. 2015
 - Conducted research on FPGA Design of Accelerators with High-level Evaluation and Synthesis Tools.
 - Accelerated the runtime of the opensource software *ALADDIN*. [Github PR]

Teaching Experience

- UCSD
 - ECE 228 Machine Learning for Physical Applications, *Spring 2023 & 2024*
 - MAE 146 Introduction to Machine Learning Algorithms, *Winter 2023*
 - ECE 271A Statistical Learning I, *Fall 2021 & 2022*
 - ECE 175A Elements of Machine Intelligence, *Winter 2020*
 - ECE 271B Statistical Learning II, *Winter 2019*
- NTHU
 - Deep Learning Lab, *UNITEC - NTHU Summer School 2017*
 - EECS2020 Signals and Systems, *Spring 2016 & 2017*
 - EE2310 Introduction to Programming (C/C++), *Fall 2015*

Academic Services

- Reviewer
 - **Journal:** TPAMI, IJCV, TNNLS, Neurocomputing.
 - **Conference:** CVPR (*outstanding reviewer in 2022*), ICCV, ECCV, NeurIPS, ICLR, ICML, WACV.
 - **Workshop:** ECCV Imbalance Problems in Computer Vision Workshop, NeurIPS Women in Machine Learning Workshop, ICLR Reliable and Responsible Foundation Models Workshop, AAI AI with Biased or Scarce Data Workshop, ECCV Women in Computer Vision Workshop.
- Program Committee ECCV 2020 Imbalance Problems in Computer Vision Workshop, AAI 2024 AI with Biased or Scarce Data Workshop
- Volunteer CVPR 2020 AC meeting, ICCV 2017, ACCV 2016.

Honors and Distinctions

- 2024 CVPR 2024 Doctoral Consortium
- 2022 Amazon Post-Internship Fellowship
- 2022 CVPR 2022 Outstanding Reviewer Award
- 2018 UCSD Electrical and Computer Engineering Department Fellowship
- 2017 Appier Scholarship for Attending International Conference
- 2017 NTHU EECS Scholarship for Attending International Conference
- 2017 CVGIP Excellent Paper Award
- 2016 NTHU EE Admission Scholarship
- 2014 NTHU EECS Scholarship for Outstanding Students
- 2014 Jia-Bin Chen Scholarship for Outstanding Students in EE
- 2013 NTHU Scholarship for Academic Excellence
- 2012 - 2013 Breaking records in athletics of NTHU Track&Field on three occasions

Leadership

- 2019 - 2023 **Mentor of Summer Research Internship Program (SRIP), UCSD.**
 - Mentored BS/MS students on deep learning and computer vision research.
 - **2019 - 2020** Collected the *BDD-OIA* dataset, a large-scale object-induced action dataset for autonomous driving, as an important add-on to the BDD dataset. Published a paper at the CVPR 2020 conference.
 - **2021 - 2022** Researched on scene graphs generation. Published two papers at the ICCV 2021 and NeurIPS 2022, respectively.
 - **2022 - 2023** Organized a study group for BEV (Bird's-Eye-View) object detection.
- 2022 - 2023 **Mentor of UCSD Graduate Women in Computing (GradWic), UCSD.**
 - Held regular meetings with mentees to discuss questions in graduate studies.
- 2012 - 2013, **Member of EE Student Association of Academic Affair, NTHU.**
- 2014 - 2015
 - Organized outreach events for high-school students and talks for the department.
- 2014 - 2015 **Team Leader in the NTHU EE Women's Basketball Team, NTHU.**
 - Held recruiting and team-building events, and organized inter-school games registration.
- 2014 **Member of Tsinghua Friendship Ambassadors Association (TFAA), NTHU.**
 - Assisted in holding the 2014 NTHU International Week.