

Chien-Yi Wang

RESEARCH ENGINEER · APPLIED SCIENTIST · RESEARCH SCIENTIST

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Summary

Current Senior Research Scientist at NVIDIA Research in Taiwan. 8+ years experience specializing in computer vision research, deep learning-based model optimization, and machine learning service integration. My research focus is mainly on cross-modality representation learning, face modeling, and 2D/3D scene understanding. I am interested in revolutionizing a machine learning system from the bottom up, devising a better problem-solving method for challenging tasks, and learning new technologies and tools if the need arises. Excited to bring cutting-edge AI technology to the Taiwanese Community by writing and curating blogs in Chinese.

Work Experience

NVIDIA

SENIOR RESEARCH SCIENTIST

Taipei, Taiwan

Oct. 2022 - Current

- Research on cross-modality representation learning.

Microsoft

SENIOR RESEARCH ENGINEER

Taipei, Taiwan

Sep. 2018 - Sep. 2022

- Built and deployed the latest face recognition and face anti-spoofing CNN-based models into the Windows Hello product for frictionless Windows login experience. The latest version reduced the error rate by up to 30% and improve the user experience index by 10%.
- Addressed the long-standing cross model compatibility issue in Windows Hello by developing a novel unified representation learning framework. The proposed solution can significantly improve the software upgrade experience and save the package size by 55%.
- Proposed and implemented the local-adaptive face recognition model, which can further actively optimize the model during run-time on specific devices. The solution is integrated into the physical access control system for the first-stage evaluation and deployment.
- Designed the light-weight efficient siamese-based multi-face tracking algorithm and integrated the system into the internal products.
- Led and managed multiple interns for driving long-term product-oriented research projects.
- Published (and submitted) several research works in top conferences of Computer Vision.

Ambarella, Inc.

ALGORITHM ENGINEER

Hsinchu, Taiwan

Feb. 2018 - Aug. 2018

- Built and deployed hardware efficient CNN-based face detection models which are capable of real-time inference on low-power chips.
- Implemented state-of-the-art CNN-based model compression and quantization algorithms in the internal development pipeline.

Honda Research Institute

RESEARCH ENGINEER & RESEARCH INTERN

Mountain View, CA, USA

May. 2016 - Jan. 2018

- Built and deployed a 3D scene understanding framework which consists of 3D object detection, localization, point cloud semantic segmentation, and object tracking modules. It was integrated into the internal data collection tool for building datasets more efficiently.
- Collaborate with the partner company to annotate fine-grained segmentation labels and ensure the diversity and cleanness of the dataset.
- Developed a LiDAR and camera sensor fusion algorithm which employed the multi-task learning of semantic segmentation and object detection. It was integrated into the collaborative fleet learning pipeline which enables the parking map real-time generation and broadcasting.
- Published a US patent and a paper in 2018 IEEE IV conference.

Education

University of Southern California (USC)

MASTER IN ELECTRICAL ENGINEERING (GPA: 3.91 / 4.0)

Los Angeles, CA, USA

Aug. 2014 - Aug. 2016

- Got the Scholarship for Overseas Study from Ministry of Education in Taiwan.
- Teaching assistant (TA) for the class "Simulation Methods for Stochastic Systems".
- Developed the robust contour detection and image segmentation algorithm in Media Communication Lab (MCLab) and published a paper.
- Became the PhD Candidate in 2015.

National Taiwan University (NTU)

BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING (GPA: 4.0 / 4.0)

Taipei, Taiwan

Aug. 2009 - Jun. 2013

- Got the Presidential Award twice which is given to the top 5% students in the department.
- Received the College Student Research Creativity Award from National Science Council.
- Got the Silver Medal in 50th International Mathematical Olympiad (IMO).

Publications

- Chih-Jung Chang, Yaw-Chern Lee, Shih-Hsuan Yao, Min-Hung Chen, **Chien-Yi Wang**, Shang-Hong Lai, Trista Pei-Chun Chen, "A Closer Look at Geometric Temporal Dynamics for Face Anti-Spoofing", in IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshop, 2023
- Meng-Tzu Chiu, Hsun-Ying Cheng, **Chien-Yi Wang**, Shang-Hong Lai, "RGB-D Face Recognition with Identity-Style Disentanglement and Depth Augmentation", in IEEE Transactions on Biometrics, Behavior, and Identity Science (TBIOM), 2023
- Fu-En Wang, **Chien-Yi Wang**, Min Sun, Shang-Hong Lai, "MixFairFace: Towards Ultimate Fairness via MixFair Adapter in Face Recognition", in AAAI Conference on Artificial Intelligence (AAAI), 2023
- Chu-Chun Chuang, **Chien-Yi Wang**, Shang-Hong Lai, "Generalized Face Anti-Spoofing via Multi-Task Learning and One-Side Meta Triplet Loss", in IEEE International Conference on Automatic Face and Gesture Recognition (FG), 2023
- **Chien-Yi Wang**, Yu-Ding Lu, Shang-Ta Yang, Shang-Hong Lai, "PatchNet: A Simple Face Anti-Spoofing Framework via Fine-Grained Patch Recognition", in IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2022
- **Chien-Yi Wang***, Wenbin Zhu*, Kuan-Lun Tseng, Shang-Hong Lai, Baoyuan Wang, "Local-Adaptive Face Recognition via Graph-based Meta-Clustering and Regularized Adaptation", in IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2022
- **Chien-Yi Wang***, Chih-Ting Liu*, Shao-Yi Chien, Shang-Hong Lai, "FedFR: Joint Optimization Federated Framework for Generic and Personalized Face Recognition", in AAAI Conference on Artificial Intelligence (AAAI), 2022
- Yu-Chun Wang, **Chien-Yi Wang**, Shang-Hong Lai, "Disentangled Representation with Dual-stage Feature Learning for Face Anti-spoofing", in Winter Conference on Applications of Computer Vision (WACV), 2022
- Meng-Tzu Chiu, Hsun-Ying Cheng, **Chien-Yi Wang**, Shang-Hong Lai, "High-Accuracy RGB-D Face Recognition via Segmentation-Aware Face Depth Estimation and Mask-Guided Attention Network", in IEEE International Conference on Automatic Face and Gesture Recognition (FG), 2021
- **Chien-Yi Wang**, Athma Narayanan, Yi-Ting Chen, "Joint 3D object detection and orientation estimation via multimodal fusion", US Patent, 2021
- **Chien-Yi Wang**, Ya-Liang Chang, Shang-Ta Yang, Shang-Hong Lai, "Unified Representation Learning for Cross Model Compatibility", in British Machine Vision Conference (BMVC), 2020.
- **Chien-Yi Wang**, Yi-Ting Chen, Behzad Dariush, "Systems for generating parking maps and methods thereof", US Patent, 2018
- **Chien-Yi Wang**, Athma Narayanan, Abhishek Patil, Wei Zhan, Yi-Ting Chen, "A 3D Dynamic Scene Analysis Framework for Development of Intelligent Transportation Systems", IEEE Intelligent Vehicles Symposium (IV), 2018.
- Xiang Fu, **Chien-Yi Wang**, Chen Chen, Changhu Wang, C.-C. Jay Kuo, "Robust Image Segmentation Using Contour-Guided Color Palette", Proceedings of IEEE International Conference on Computer Vision (ICCV), 2015.

Presentation

2021	Recent Advances in Face Recognition , National Taiwan University	<i>Taipei, Taiwan</i>
2021	Recent Advances in Face Recognition , National Yang Ming Chiao Tung University	<i>Hsinchu, Taiwan</i>
2021	Challenges in Face Recognition , Machine Learning and Data Mining Meetup	<i>Taipei, Taiwan</i>
2020	AI Research in the Industry , International Olympiad Alumni Meetup	<i>Taichung, Taiwan</i>
2018	Computer Vision Research in the Industry , National Chiao Tung University	<i>Hsinchu, Taiwan</i>

Reviewer

- IEEE Conference on Computer Vision and Pattern Recognition (CVPR) (**Awarded as Outstanding Reviewer in 2022**)
- IEEE European Conference on Computer Vision (ECCV)
- IEEE International Conference on Computer Vision (ICCV)
- IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
- International Journal of Computer Vision (IJCV)
- IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)
- International Joint Conferences on Artificial Intelligence (IJCAI)
- Asian Conference on Computer Vision (ACCV)
- British Machine Vision Conference (BMVC)
- IEEE Intelligent Vehicles Symposium (IV)