

# 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 cleanliness 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.

## Publications

- 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**, 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.

## Education

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### University of Southern California (USC)

Los Angeles, CA, USA

MASTER IN ELECTRICAL ENGINEERING (GPA: 3.91 / 4.0)

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)

Taipei, Taiwan

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

Aug. 2009 - Aug. 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).

## Presentation

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

## Writing

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### Learning by Hacking

Facebook Page

CURATOR & WRITER

Apr. 2017 - Feb. 2021

- Curate the latest technology from the field of Deep Learning and Computer Vision and write posts in Chinese on the Facebook page ([link](#)).

## Reviewer

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- 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)
- Asian Conference on Computer Vision (ACCV)
- British Machine Vision Conference (BMVC)
- IEEE Intelligent Vehicles Symposium (IV)