Cheng-Yao (Sean) **Hong**

Computer Vision Researcher

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Research Interests

Generative vision and diffusion; multimodal / vision–language learning; efficient transformers; 3D / embodied perception.

Education

National Taiwan University (NTU) *Taipei, Taiwan*

M.S. in Electrical Engineering and Computer Science

- **Thesis:** Design of Timing-Error Detection and Correction System for Wide-Range Variation-Tolerant Microprocessors

National Chiao Tung University (NCTU) *Hsinchu, Taiwan*

B.S. in Electronics Engineering

- **Senior Project:** Implementing Telematics for Enhanced Security and Real-Time Traffic Navigation

Selected Publications

(* indicates equal contribution)

Promptable 3-D Object Localization with Latent Diffusion Models

NeurIPS *2025*

Cheng-Yao Hong, Li-Heng Wang, Tyng-Luh Liu

Multimodal Promptable Token Merging for Diffusion Models

AAAI *2025*

Cheng-Yao Hong, Tyng-Luh Liu

Contrastive Learning for DeepFake Classification and Localization via Multi-Label Ranking

CVPR *2024*

Cheng-Yao Hong, Yen-Chi Hsu, Tyng-Luh Liu

Attention Discriminant Sampling for Point Clouds

ICCV *2023*

Cheng-Yao Hong, Yu-Ying Chou, Tyng-Luh Liu

ABC-Norm Regularization for Fine-Grained and Long-Tailed Image Classification

IEEE TIP *2023*

Yen-Chi Hsu*, **Cheng-Yao Hong***, Ming-Sui Lee, Davi Geiger, Tyng-Luh Liu

Decoupled Contrastive Learning

ECCV *2022*

Chun-Hsiao Yeh, **Cheng-Yao Hong**, Yen-Chi Hsu, Tyng-Luh Liu, Yubei Chen, Yann LeCun

Research Experience

Academia Sinica, Institute of Information Science (IIS) *Taipei, Taiwan*

Research Assistant (Advisor: Professor Tyng-Luh Liu) *Jun. 2018 – Present*

- Developing a high-speed robotic manipulation framework that fuses event cameras with dynamic 3D object tracking in a ROS-based control system for robust, low-latency interaction in cluttered scenes. (Ongoing)
- Designed a promptable 3D object localization framework that leverages latent diffusion priors to unify general, few-shot, and language-grounded detection, achieving **+7.1%** over prior diffusion-based methods on ScanNetV2. (NeurIPS)
- Developed a multimodal promptable token merging scheme for diffusion models, improving inference throughput by **2.9**× while maintaining image quality and text–image alignment on standard generation benchmarks. (AAAI)
- Devised a multi-label ranking objective for DeepFake classification and localization that handles sequential, region-wise manipulations, improving localization accuracy by **5.22%**. (CVPR)
- Introduced an attention-based discriminant point sampling strategy that selects geometry-critical points in point clouds, boosting 3D classification performance by **2%**. (ICCV)
- Formulated ABC-Norm, a normalization-based regularizer that mitigates class imbalance, yielding **+2.1%** on fine-grained and long-tailed image classification benchmarks. (IEEE TIP)
- Proposed a decoupled contrastive learning objective that resolves negative–positive coupling in InfoNCE-style losses, improving ImageNet linear evaluation by **5.1%** over standard contrastive baselines. (ECCV)

National Taiwan University, Energy Efficient Circuit and System Lab *Taipei, Taiwan*

IC Design Engineer Research Assistant *Jan. 2017 – Apr. 2018*

- Co-developed a variation-resilient microprocessor with a two-level timing error correction scheme, achieving high energy efficiency in 28nm CMOS. (IEEE JSSC)

Honors & Awards

2020	**Silver Medal (Top 2%),** Deepfake Detection Challenge (Hosted by AWS, Meta, Microsoft)	*Kaggle*
2019	**5th Place**, LVIS Challenge (Large Vocabulary Instance Segmentation) @ ICCV Workshop	*Seoul, Korea*
2020	**7th Place**, LVIS Challenge (Large Vocabulary Instance Segmentation) @ ECCV Workshop	*Online*
2020	**Scholarship**, Appier Award for Top Research in AI and Information Technology	*Appier Inc.*
2020	**Travel Grant**, Academia Sinica Scholarship for Young Scholars to Attend International Conferences	*Taipei, Taiwan*

Academic Service

Journals & Conferences

Reviewer *2021 – Present*

- **Journals:** IEEE TPAMI, Pattern Recognition (PR)
- **Conferences:** CVPR (2021–2026), ICCV (2021–2023), ECCV (2022–2024), NeurIPS (2024–2025), ICLR (2025–2026), ICML (2025), AAAI (2026)

Teaching Experience

National Taiwan University *Taipei, Taiwan*

Teaching Assistant *Jan. 2017 – Apr. 2018*

- Course: Advanced Integrated Circuit Design (Instructor: Prof. Tsung-Te Liu)

Taipei Municipal Chenggong High School *Taipei, Taiwan*

Guest Speaker *Dec. 2024*

- Delivered a lecture on “Applications of Generative Models” to introduce high school students to cutting-edge AI technologies.

Technical Skills

Programming & Frameworks	Python, PyTorch, C/C++, ROS, MATLAB, LaTeX, Git, Docker
Hardware Design	Verilog, Design Compiler, IC Compiler, HSPICE, Spectre
Languages	Mandarin (Native), English (Fluent)

Full Publications

(* indicates equal contribution)

Peer-Reviewed Conference Papers

[1] Promptable 3-D Object Localization with Latent Diffusion Models

NeurIPS *2025*

Cheng-Yao Hong, Li-Heng Wang, Tyng-Luh Liu

[2] Multimodal Promptable Token Merging for Diffusion Models

AAAI *2025*

Cheng-Yao Hong, Tyng-Luh Liu

[3] Contrastive Learning for DeepFake Classification and Localization via Multi-Label Ranking

CVPR *2024*

Cheng-Yao Hong, Yen-Chi Hsu, Tyng-Luh Liu

[4] Attention Discriminant Sampling for Point Clouds

ICCV *2023*

Cheng-Yao Hong, Yu-Ying Chou, Tyng-Luh Liu

[5] IoU-Aware Multi-Expert Cascade Network via Dynamic Ensemble for Long-tailed Object Detection

ICASSP *2023*

Wan-Cyuan Fan, **Cheng-Yao Hong***, Yen-Chi Hsu, Tyng-Luh Liu

[6] Decoupled Contrastive Learning

ECCV *2022*

Chun-Hsiao Yeh, **Cheng-Yao Hong**, Yen-Chi Hsu, Tyng-Luh Liu, Yubei Chen, Yann LeCun

[7] SAGA: Self-Augmentation with Guided Attentions for Representation Learning

ICASSP *2022*

Chun-Hsiao Yeh, **Cheng-Yao Hong***, Yen-Chi Hsu, Tyng-Luh Liu

[8] The Maximum a Posterior Estimation of Darts

ICIP *2021*

Jun-Liang Lin, Yi-Lin Sung, **Cheng-Yao Hong***, Han-Hung Lee, Tyng-Luh Liu

[9] Query-Driven Multi-Instance Learning

AAAI (Spotlight) *2020*

Yen-Chi Hsu, **Cheng-Yao Hong**, Ming-Sui Lee, Tyng-Luh Liu

[10] Video Summarization with Anchors and Multi-Head Attention

ICIP *2020*

Yi-Lin Sung, **Cheng-Yao Hong**, Yen-Chi Hsu, Tyng-Luh Liu

Journal Articles

[1] ABC-Norm Regularization for Fine-Grained and Long-Tailed Image Classification

IEEE TIP *2023*

Yen-Chi Hsu, **Cheng-Yao Hong***, Ming-Sui Lee, Davi Geiger, Tyng-Luh Liu

[2] A Variation-Resilient Microprocessor With a Two-Level Timing Error Detection and Correction System in 28-nm CMOS

IEEE JSSC *2019*

Cheng-Yao Hong, Tsung-Te Liu