

Tsung-Shan (Kevin) Yang

Los Angeles, CA | tsungshan.yang@gmail.com | 213-519-1489 | keevin60907.github.io/

linkedin.com/in/tsung-shan-yang | github.com/keevin60907

Education

University of Southern California (USC) Aug 2022 – Dec 2025(expected)
Ph.D. candidate in Electrical and Computer Engineering

- **Advisor:** Prof. C-C. Jay Kuo
- **Thesis:** Interpretable and Efficient Multi-Modal Data Interplay: Algorithms and Applications

National Taiwan University (NTU) B.S., M.S. in Electrical Engineering Sep 2014 – Jun 2021
National Taiwan University (NTU) B.S. in Chemistry Sep 2014 – Jun 2019

Experience

Machine Learning Engineer, Tiktok Inc. – San Jose, CA May 2025 – Present

- Developed an efficient AI-generated video detection model using lightweight architectures
- Achieved state-of-the-art performance with 3% of model parameters and a 98% reduction in inference time
- Accelerated hack-detection pipeline 10× by identifying malicious users and abnormal video patterns

Selected Publications

[C1] SVD-Det: A Lightweight Framework for Video Forgery Detection Using Semantic and Visual Defect Cues
Tsung-Shan Yang, Tianyu Zhang, Feng Qian, Bing Yan, C.-C. Jay Kuo
Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) (2026)

- 97% smaller, 98% faster, while achieving +2.7% higher AUC for AIGC video forgery detection

[J1] Efficient Human-Object-Interaction Detection via Interaction Label Coding and Conditional Decision
Tsung-Shan Yang, Yun-Cheng Wang, Chengwei Wei, Suyu You, C.-C. Jay Kuo
Computer Vision and Image Understanding (CVIU) (2025): 104390.

- Reduce computational cost by 15,800× fewer FLOPs compared to state-of-the-art methods

[C2] Challenges in video-text retrieval: via transparent alignment
Tsung-Shan Yang, Yun-Cheng Wang, Chengwei Wei, Suyu You, C.-C. Jay Kuo
Applications of Digital Image Processing XLVIII. Vol. 13605. SPIE, 2025

- Deploy an explainable ranking pipeline for video-text retrieval, reducing 97% trainable parameters

[J2] Image-Text Retrieval via Green Explainable Multi-modal Alignment (GEMMA)
Tsung-Shan Yang, Yun-Cheng Wang, Chengwei Wei, Suyu You, C.-C. Jay Kuo
APSIPA Transactions on Signal and Information Processing (2025)

- Developed an interpretable alignment framework for image and text encoders with 3% of trainable parameters

[C3] BPQA: A Blind Point Cloud Quality Assessment Method
Qingyang Zhou, Aolin Feng, **Tsung-Shan Yang**, Shan Liu, C.-C. Jay Kuo
IEEE International Conference on Image Processing Challenges and Workshops (ICIPCW), 2023

- Develop an interpretable learning framework with minimal computational overhead

[J3] Viewing Bias Matters in 360 Videos Visual Saliency Prediction
Peng-Wen Chen, **Tsung-Shan Yang**, Gi-Luen Huang, Chia-Wen Huang, Yu-Chieh Chao, Pei-Yuan Wu
IEEE Access Journal paper, 2023

- Analyzed human bias in saliency maps and extended spherical kernels to time-series data

[C4] NTIRE 2020 Challenge on NonHomogeneous Dehazing
Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops. (CVPRW) 2020.

- Propose an attention refinement block of the deep learning model

Awards/Scholarships

2024 IEEE MIPR Student Grant	<i>IEEE TCMC</i>
2022 Taiwan - USC Scholarship	<i>Ministry of Education in Taiwan</i>
2022 Viterbi School of Engineering / Graduate School Fellowship	<i>University of Southern California</i>
2014 Fall & 2015 Spring Dean's List	<i>National Taiwan University</i>
2011 Gold Medal	<i>International Junior Science Olympiad</i>

Teaching Experience

Systems for Machine Learning , University of Southern California	2024 Spring, 2025 Spring
<ul style="list-style-type: none">• Introduce the hardware of TPUs and GPUs• Design the project about LLM inference, such as LoRA and KV-cache	
Introduction for Programming , University of Southern California	2024 Fall
<ul style="list-style-type: none">• Lead weekly hand-on labs• Introduce good coding styles and algorithms	
Machine Learning , National Taiwan University	2019 Fall, 2020 Fall
<ul style="list-style-type: none">• Design assignments about theoretical analysis and deep learning projects• Maintain the course website	
Data Structure , National Taiwan University	2020 Spring
<ul style="list-style-type: none">• Design assignments about theoretical analysis and data structure implementation	
General Chemistry , National Taiwan University	2018 Fall
<ul style="list-style-type: none">• Lead group discussions and provide hints on assignments• Provide two-hour TA classes each week for over 300 students	

Technologies

Languages: Python, C++, C, HTML, MATLAB

Strength: Computer Vision, Deep Learning, Algorithm Design, Physical Chemistry, Quantum Chemistry

Languages: English as a Second Language, Native Mandarin Speaker

Tools: PyTorch, OpenCV, Tensorflow, Keras, Scikit-Learn

Projects can be viewed on my GitHub: <https://github.com/keevin60907>