

# Tsung-Shan (Kevin) Yang

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## Education

<b>University of Southern California (USC)</b> Ph.D. candidate in Electrical and Computer Engineering	Aug 2022 – Dec 2025(expected)
• Advisor: Prof. C-C. Jay Kuo	
• Thesis: Interpretable and Efficient Multi-Modal Data Interplay: Algorithms and Applications	
<b>National Taiwan University (NTU)</b> B.S., M.S. in Electrical Engineering	Sep 2014 – Jun 2021
<b>National Taiwan University (NTU)</b> B.S. in Chemistry	Sep 2014 – Jun 2019

## Experience

<b>Machine Learning Engineer</b> , 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	

## Selected Publications

### [J1] Efficient Human-Object-Interaction Detection via Interaction Label Coding and Conditional Decision

**Tsung-Shan Yang**, Yun-Cheng Wang, Chengwei Wei, Suya You, C.-C. Jay Kuo

*Computer Vision and Image Understanding (CVIU)*(2025): 104390.

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

### [J2] Image-Text Retrieval via Green Explainable Multi-modal Alignment (GEMMA)

**Tsung-Shan Yang**, Yun-Cheng Wang, Chengwei Wei, Suya 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

### [C1] 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

### [C2] 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

IEEE TCMC

2022 Taiwan - USC Scholarship

Ministry of Education in Taiwan

2022 Viterbi School of Engineering / Graduate School Fellowship

Univserity of Southern California

2014 Fall & 2015 Spring Dean's List

National Taiwan University

2011 Gold Medal

International Junior Science Olympiad

## Teaching Experience

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<b>Systems for Machine Learning</b> , University of Southern California	2024 Spring, 2025 Spring
• Introduce the hardware of TPUs and GPUs	
• Design the project about LLM inference, such as LoRA and KV-cache	
<b>Introduction for Programming</b> , University of Southern California	2024 Fall
• Lead weekly hand-on labs	
• Introduce good coding styles and algorithms	
<b>Machine Learning</b> , National Taiwan University	2019 Fall, 2020 Fall
• Design assignments about theoretical analysis and deep learning projects	
• Maintain the course website	
<b>Data Structure</b> , National Taiwan University	2020 Spring
• Design assignments about theoretical analysis and data structure implementation	
<b>General Chemistry</b> , National Taiwan University	2018 Fall
• Lead group discussions and provide hints on assignments	
• Provide two-hour TA classes each week for over 300 students	

## Technologies

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**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>