Tsung-Shan (Kevin) Yang

PHONE: +1-213-519-1489 EMAIL: tsungshan.yang@gmail.com
WEB: keevin60907.github.io LinkedIn: https://www.linkedin.com/in/tsung-shan-yang/

Education

University of Southern California (USC) **Aug 2022 - Present**
Ph.D. candidate *in the Department of Electrical Computer Engineering* *California, USA*
Advisor: Prof. **C.-C. Jay Kuo**

National Taiwan University (NTU) **Sep 2019 - Jun 2021**
Master of Science *in Graduate Institute of Communications Engineering* *Taipei, Taiwan*
National Taiwan University (NTU) **Sep 2014 - Jun 2019**
Bachelor of Science *in the Department of Chemistry* *Taipei, Taiwan*
Bachelor of Science *in Engineering degree in the Department of Electrical Engineering* *Taipei, Taiwan*

Selected Publications

1. GMA: Green Multi-Modal Alignment for Image-Text Retrieval
Tsung-Shan Yang, Yun-Cheng Wang, Chengwei Wei, Suya You, C.-C. Jay Kuo
*Asia Pacific Signal and Information Processing Association Annual Summit and Conference (**APSIPA ASC**), 2024*
· Explainable alignment for features from two separately trained models in different modalities (image and text)

2. 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
arXiv preprint arXiv:2408.07018, 2024
· Explainable scheme for two-stage Human-Object Interaction Detection

3. GHOI: A Green Human-Object-Interaction Detector
Tsung-Shan Yang, Yun-Cheng Wang, Chengwei Wei, C.-C. Jay Kuo
*IEEE International Conference on Multimedia Information Processing and Retrieval (**MIPR**), 2024*
· Green Learning solution for HOI detection, which reduces the number of FLOPs to 1/15,800 compared to SOTAs

4. 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*
· Achieve the second-best score on the challenge with an interpretable and small learning scheme

5. Viewing Bias Matters in 360 Videos Visual Saliency Prediction
Peng-Wen Chen, **Tsung-Shan Yang**, Gi-Luen Huang, Chia-Wen Huang, Yu-Chieh Chao, Chien-Hung Lu, Pei-Yuan Wu
IEEE Access Journal paper, 2023
· Statistically analyze the human bias in saliency maps and generalize the spherical kernel to time series data

6. NTIRE 2020 Challenge on NonHomogeneous Dehazing
*IEEE Computer Vision and Pattern Recognition Workshop (**CVPRW**), 2020*
· Propose an attention refinement block of the deep learning model

7. Few Shot Learning With Difficult Settings
Yen-Ting Liu, Guan-Shiuan Kuo, **Tsung-Shan Yang**, Po-Chun Hsu, Chiou-Shann Fuh
*The 31st IPPR Conference on Computer Vision, Graphic and Image Processing (**CVGIP**), 2018*
· Analyze the different approaches to few-shot learning

8. **IR Drop Prediction of ECO-Revised Circuits Using Machine Learning**
*Shih-Yao Lin, Yen-Chun Fang, Yu-Ching Li, Yu-Cheng Liu, **Tsung-Shan Yang**, Shang-Chien Lin, Chien-Mo Li, Eric Jia-Wei Fang*
*IEEE International Conference about Large-scale Integration Testing and Symposium (**VTS**), 2018*
· Reduce 30X simulation time through deep learning

Awards / Scholarship

2024 IEEE MIPR Student Grant *IEEE TCMC*
2022 Taiwan USC Scholarship *Ministry of Education in Taiwan*
2022 Viterbi School of Engineering / Graduate School Fellowship *University of Southern California*
2014 Fall & 2015 Spring Dean's List *Department of Chemistry at National Taiwan University*
2011 Gold Medal in the 8th International Junior Science Olympiad (IJSO)

Research Experience

USC - MediaComm Lab **Aug 2022 - Present**
Advisor: Prof. **C.-C. Jay Kuo**
· Green Learning in Human-Object Interaction Detection
· Green Learning in Multimodal Alignment

NTU - Machine Learning and Estimation Theory Lab **Jul 2019 - Sep 2021**
Advisor: Prof. **Pei-Yuan Wu**
· Omnidirectional Image Encoding
· Propose a feature extraction method on panoramic images

NTU - Yuan-Chung Cheng's Research Group **Jun 2017 - Feb 2019**
Advisor: Prof. **Yuan-Chung Cheng**
· 2D spectrum analysis about coupling excited molecules
· Show ability to conduct an interdisciplinary project about machine learning and spectroscopy

Teaching Experience

USC - Systems for Machine Learning **2023 Spring**
· Introduce the hardware of TPUs and GPUs
· Design the project about finetuning LLMs

NTU - Machine Learning **2019 Fall & 2020 Fall**
· Design assignments about theoretical analysis and deep learning projects
· Maintain the course website

NTU - Data Structure **2020 Spring**
· Design assignments about theoretical analysis and data structure implementation

NTU - General Chemistry **2018 Fall**
· Lead group discussions and provide hints on assignments
· Provide two-hour TA classes each week for over 300 students

Skills

· ***Software****: Python / C++ / HTML / MATLAB / C / JavaScript*
· **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