Yi-Lin Sung

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EDUCATION

The University of North Carolina at Chapel Hill (UNC) — Chapel Hill, NC
PhD student in Computer Science (CS) — *Jan. 2021 – Present*
- Researched multimodal deep learning under the supervision of Mohit Bansal in the MURGe lab.

National Taiwan University — Taipei, Taiwan
Master of Science in Graduate Institute of Communication Engineering (GICE) — *Sep. 2017 – June 2019*
- Thesis: Difference-Seeking Generative Adversarial Network – Unseen Data Generation. Advisor: Soo-Chang Pei

National Taiwan University — Taipei, Taiwan
Bachelor of Science in Chemical Engineering (CHE) — *Sep. 2012 – Jan. 2017*

SELECTED PUBLICATIONS

- Ziyang Wang, **Yi-Lin Sung**, Feng Cheng, Gedas Bertasius, Mohit Bansal, "Unified Coarse-to-Fine Alignment for Video-text Retrieval", *International Conference on Computer Vision (ICCV)*, 2023.

- **Yi-Lin Sung**, Linjie Li, Kevin Lin, Zhe Gan, Mohit Bansal, Lijuan Wang, "An Empirical Study of Multimodal Model Merging", *arXiv:2304.14933*, 2023. [paper]

- Yan-Bo Lin, **Yi-Lin Sung**, Jie Lei, Mohit Bansal, Gedas Bertasius, "Vision Transformers are Parameter-Efficient Audio-Visual Learners", *Computer Vision and Pattern Recognition Conference (CVPR)*, 2023. [paper]

- **Yi-Lin Sung**, Jaemin Cho, Mohit Bansal, "LST: Ladder Side-Tuning for Parameter and Memory Efficient Transfer Learning", *Neural Information Processing Systems (NeurIPS)*, 2022. [paper]

- **Yi-Lin Sung**, Jaemin Cho, Mohit Bansal, "VL-Adapter: Parameter-Efficient Transfer Learning for Vision-and-Language Tasks", *Computer Vision and Pattern Recognition Conference (CVPR)*, 2022 [paper]

- **Yi-Lin Sung***, Varun Nair*, Colin Raffel, "Training Neural Networks with Fixed Sparse Masks". *Neural Information Processing Systems (NeurIPS)*, 2021. [paper]

- **Yi-Lin Sung**, Sung-Hsien Hsieh, Soo-Chang Pei, Chun-Shien Lu, "Difference-Seeking Generative Adversarial Network – Unseen Data Generation". *International Conference on Learning Representations (ICLR)*, 2020. [paper]

- **Yi-Lin Sung***, Jun-Liang Lin*, Cheng-Yao Hong*, Tyng-Luh Liu, "The Maximum A Posteriori Estimation of DARTS". *IEEE International Conference on Image Processing (ICIP)*, 2021. [paper]

- **Yi-Lin Sung**, Cheng-Yao Hong, Yen-Chi Hsu, Tyng-Luh Liu, "Video Summarization with Anchors and Multi-Head Attention". *IEEE International Conference on Image Processing (ICIP)*, 2020. [paper]

- **Yi-Lin Sung**, "Tetris Battle – A New Environment for Single-mode and Double-Mode Game". *Neural Information Processing Systems (NeurIPS) Workshop on Deep Reinforcement Learning*, 2019. [paper]

RESEARCH EXPERIENCE

UNC Multimodal Understanding, Reasoning, and Generation for Language Lab — Chapel Hill, NC
Graduate Research Assistant. Advisor: Dr. Mohit Bansal — *Aug. 2021 – Present*
- Research the topic of multi-modal learning.

UNC Biomedical Image Analysis Group (UNC-biag) — Chapel Hill, NC
Intern. Advisor: Dr. Marc Niethammer — *May 2021 – Aug. 2021*
- Maintained and revitalized the dated pediatric airway analysis tool.
- Added an open-source segmentation tool (easyreg) to the project to enable the automatically airway segmentation.
- Built a two-stage landmark detector to process the extremely large 3D inputs, and it outperformed the baseline by 36%.

Institute of Information Science, Academia Sinica — Taipei, Taiwan
Part-time (Sep. 2018 – Dec. 2019) and full-time research assistant. Advisor: Dr. Tyng-Luh Liu — *Sep. 2018 – Mar. 2020*
- Researched and submitted the work about improving Differentiable Architecture Search (DARTS) with learnable prior.
- Researched and submitted the work about video summarization with anchors and attention.
- Utilized oversampling and sample-reweighting techniques to handle the imbalance issues in the LVIS challenge.

Institute of Information Science, Academia Sinica — Taipei, Taiwan
Research intern. Advisor: Dr. Tyng-Luh Liu — *July. 2018 – Aug. 2018*
- Researched the topic of video summarization and implemented the whole pipeline for training a summarizer.

Industry Experience

Meta   Menlo Park
Research intern working with Abhimanyu Dubey, Filip Radenovic and Abhishek Kadian   *May 2023 – Aug. 2023*
- Research the topic of text-to-image diffusion models.

Microsoft   Remote
Summer Research intern working with Linjie Li, Zhe Gan and Kevin Lin   *May 2022 – Aug. 2022*
- Research the topic of multimodal model merging.

Cinnamon AI Taiwan   Taipei, Taiwan
AI researcher   *Mar. 2020 – Jan. 2021*
- Accelerated the company's main models by 25% without sacrificing the accuracy by using model quantization and distillation.
- Built a classifier with attention that achieves 98% accuracy, which surpasses the expectation by 13%, in a client project.
- Led and taught NLP classes in the Bootcamp to nurture AI talents in Taiwan.

Teaching Experience

Deep Learning @ UNC Chapel Hill   Chapel Hill, NC
Teaching Assistant. Instructor: Dr. Colin Raffel   *Jan. 2021 – May 2021*
- Prepared the answers for homework and tests and graded them.

Natural Language Processing @ Cinnamon AI Bootcamp   Taipei, Taiwan
Instructor   *June 2020 – Aug. 2020*
- Gave lectures about the latest NLP pre-trained models and using PyTorch for NLP.

Machine Learning and Having It Deep and Structured @ National Taiwan University   GICE, NTU
Teaching Assistant. Instructor: Dr. Hung-Yi Lee   *Jan. 2018 – Jun. 2018*
- Responsible for the first homework: Validating the Theories of Neural Network through Experiments.

Projects Highlights

PyTorch Lightning Semi-Supervised Learning
A project to implement state-of-the-art algorithms with standardized framework
- Reproduced Mixmatch with comprehensive unit tests and PyTorch Lightning.

Tetris Battle – A New Environment for Single-Mode and Double-Mode Game
An self-driven project on reinforcement learning (RL)
- Proposed an environment which helps develop RL algorithms, especially when the computational resources are limited.
- Trained a RL agent with Proximal Policy Optimization (PPO) to play the game.

Honors

- NeurIPS Scholar Award   2022
- Appier AI top conference scholarship   2020
- Fifth place in the Large Vocabulary Instance Segmentation (LVIS) Challenge at ICCV2019   2019

Professional Activity

- **Conference Reviewer or Program Commitee**
  - **CVPR**(2023)   **NeurIPS**(2022,2023)   **EMNLP**(2022)   **AAAI**(2023)   **ACL**(2023)   **ARR**(2023)   **ICML**(2023)   **ICCV**(2023)

- **Talks**
  - **Training Neural Networks with Fixed Sparse Masks,** NeurIPS Taipei Meetup (2021)
  - **A Hierarchical Approach for Document Analysis,** NTU (2020)
  - **Difference-Seeking Generative Adversarial Network – Unseen Data Generation,** Appier (2020)

Techniques

- **Programming Skills:** C++, Python, PyTorch, TensorFlow, Keras, Linux, LaTeX
- **Open Source Contributions:** PyTorch, PyTorch Lightning, DALLE-pytorch