

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 – 2019. June
 - 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

- Yan-Bo Lin, **Yi-Lin Sung**Jie Lei, Mohit Bansal, Gedas Bertasius “Vision Transformers are Parameter-Efficient Audio-Visual Learners”, *arXiv:2212.07983*, 2022.
- **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

- **Microsoft** Remote
 - *Research intern working with Linjie Li, Zhe Gan and Kevin Lin* May 2022 – Present
 - Research the topic of efficient vision-and-language architecture.
- **Cinnamon AI Taiwan** Taipei, Taiwan
 - *AI researcher* Mar. 2020 – Jan. 2021
 - Accelerated the company's main models by 25% without sacrificing the accuracies 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 Committee**
 - CVPR (2023)
 - NeurIPS (2022)
 - EMNLP (2022)
 - AAAI (2022)
- **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, L^AT_EX
- **Open Source Contributions:** PyTorch, PyTorch Lightning, DALLE-pytorch