Yi-Lin Sung

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Education

- **The University of North Carolina at Chapel Hill (UNC)** — North Carolina
  PhD student in Computer Science (CS) — *Jan. 2021 – Present*
- **National Taiwan University** — Taipei, Taiwan
  Master of Science in Graduate Institute of Communication Engineering (GICE) — *Sep. 2017 – 2019. June*
  - Overall GPA: 4.14/4.3
  - Thesis: Difference-Seeking Generative Adversarial Network – Unseen Data Generation. Advisor: Soo-Chang Pei
    - Proposed a general framework to generate multiple kinds of unseen data and apply them to some applications, such that semi-supervised learning and novelty detection. Our method speeds up the training and attains competitive results.
  - Courses: Machine Learning, Deep Learning for Computer Vision, Computer Vision, Advanced Statistical Inference
- **National Taiwan University** — Taipei, Taiwan
  Bachelor of Science in Chemical Engineering (CHE) — *Sep. 2012 – Jan. 2017*
  - Overall GPA: 3.77/4.3, CS-related GPA (33 credits): 3.91/4.3
  - Courses: Calculus, Linear Algebra, Data Structures and Algorithms, Algorithm Design and Analysis, Machine Discovery

Publications

- **Yi-Lin Sung**, Jun-Liang Lin, Cheng-Yao Hong, Tyng-Luh Liu, "The Maximum A Posteriori Estimation of DARTS". *in submission.*
- **Yi-Lin Sung**, Cheng-Yao Hong, Yen-Chi Hsu, "Video Summarization with Anchors and Multi-Head Attention". *IEEE International Conference on Image Processing (ICIP)*, Oct. 2020.
- **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)*, Apr. 2020.
- **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*, Dec. 2019.

Open Source Contributor

- PyTorch, PyTorch Lightning, DALLE-pytorch

Honors

- Fifth place in the Large Vocabulary Instance Segmentation (LVIS) Challenge at ICCV2019.

Work/Research Experiences

- **Deep Learning @ UNC Chapel Hill** — CS, UNC
  Teaching Assistant. Instructor: Dr. Colin Raffel — *Jan. 2021 – May 2021*
  - Graded for homework and tests.
- **Cinnamon AI Taiwan** — Taipei, Taiwan
  AI researcher — *Mar. 2020 – Present*
  - 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.
- **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.
- **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.

Techniques

- **Programming Skills:** C++, Python, PyTorch, TensorFlow, Keras, Linux, LaTeX
- **Knowledges:** GAN, NAS, semi-supervised learning, novelty detection, reinforcement learning, video summarization