Chih-Ying Liu

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EDUCATION

Stanford University, California, United States
Master of Science, Electrical Engineering Expected Graduation: June 2024

- Cumulative GPA: 4.11/4.30
- Courses: Natural Language Processing with Deep Learning, Natural Language Understanding, Computer Vision: From 3D Reconstruction to Recognition, Reinforcement Learning: Behaviors and Applications

National Taiwan University (NTU), Taipei City, Taiwan
Bachelor of Science, Electrical Engineering Sep. 2018 – Jun. 2022

- Overall GPA: 4.25 / 4.30
- Honor: Three times presidential award (top 5%) in Fall 2018, Spring 2019, Spring 2020 semesters

EXPERIENCE

Deep Learning Engineer Intern
VIA Technologies, Taipei, Taiwan Jul. 2023 – Aug. 2023

- Developed bird-eye view perception models using PyTorch, achieving strong results on the Nuscenes dataset.
- Utilized Gradio to create interactive and user-friendly demos for showcasing model performance and results.
- Converted PyTorch models to ONNX and TensorRT formats, resulting in a 40 percent reduction in inference time.
- Utilized Optuna for autonomous hyperparameter tuning, resulting in improved model performance.

Research Assistant
National Taiwan University, Taipei, Taiwan Sep. 2020 – Jun. 2022

- Developed a Chinese chatbot that can induce its interlocutor to response with specific sentiments.
- Increased the diversity of the chatbot's response by 3% using advanced reinforcement learning algorithms.
- Collected and cleaned 12 million pairs of Chinese dialogue datasets for Chinese chatbot training.

PUBPLICATION

Zih-Ching Chen, Allen Fu, Chih-Ying Liu, Hung-yi Lee, and Shang-Wen Li, "Exploring Efficient-tuning Methods in Self-supervised Speech Models", IEEE Spoken Language Technology Workshop, 2022 (https://arxiv.org/abs/2210.06175)

PROJECT

Efficient Fine-tuning for Multi-Task Learning on BERT
Stanford University, California, United States Feb. 2023 – Mar. 2023

- Designed a BERT multi-task classifier that could build robust embeddings and performed well across sentiment, paraphrase, and similarity tasks, while being parameter efficient.
- Increased performance in similarity task by 42.1% by modifying similarity head based on Sentence-BERT.
- Achieved comparable performance to full fine-tuning with less than 3% to 9% of trainable parameter by inserting adaptation modules PAL, prefix-tuning, and adapters into BERT layers.

Self-supervised Monocular Depth Estimation with Semantic Guidance
Stanford University, California, United States Feb. 2023 – Mar. 2023

- Designed a framework that performed self-supervised monocular depth estimation with fused semantic information.
- Experimented with various depth-semantic attention mechanisms and introduced a new self-adaptive method.
- Utilized lightweight encoder VoVNet to achieved decent performance with much less inference time.

Efficient-tuning Methods in Self-supervised Speech Models
National Taiwan University, Taipei, Taiwan Jan. 2022 – Jul. 2022
Publication: Zih-Ching Chen, Allen Fu, Chih-Ying Liu, Hung-yi Lee, and Shang-Wen Li, "Exploring Efficient-tuning Methods in Self-supervised Speech Models", IEEE Spoken Language Technology Workshop, 2022

- Implemented prefix tuning on three speech self-supervised learning models and conducted experiments on six SUPERB downstream tasks to explore its effectiveness and generatability.
- Analyzed six different efficient tuning methods, including prefix tuning, weighted sum and adapters, on speech self-supervised learning models, and showed that these methods can achieve comparable performance to finetuning with less than 1% trainable parameters of finetuning.
- Explored other benefits of these efficient tuning methods and found out they have better stability and improved performance in low data regime.

HierarchiOrg Website
National Taiwan University, Taipei, Taiwan Dec. 2020 – Jan. 2021

- Devised a website that provided efficient functions for hierarchical organizations to manage tasks.
- Designed frontend framework with React JS and managed database with GraphQL.

SKILLS

Python, Pytorch, C++, JavaScript, React, Node.js, HTML, CSS, Linux, Docker, AWS, GCP, Matlab, Verilog, Arduino, Raspberry Pi, Natural Language Processing, Speech Processing