

## **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.

**Undergraduate Research Assistant**

**National Taiwan University, Taipei, Taiwan**

Sep. 2021 – 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.

## **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 (<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, Machine Learning