CHIN-LUN (ALLEN) FU

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Education

University of California, Los Angeles (UCLA) — Sep. 2023 – Dec. 2024 (Expected)
Master of Science in Computer Science — *Los Angeles, CA*
- Overall GPA: **3.8**/4.0
- Coursework: Natural Language Processing, Advanced Topics in Natural Language Generation

National Taiwan University (NTU) — Sep. 2017 – Jun. 2022
Bachelor of Science in Electrical Engineering — *Taipei, Taiwan*
- Overall GPA: **3.8**/4.3, Last 60 GPA: **4.2**/4.3
- Coursework: Deep Learning for Computer Vision, Applied Deep Learning, Numerical Linear Algebra, Machine Learning

Work Experience

JPMorgan Chase & Co. — Jun. 2024 – Present
AI/Data Science Summer Associate — *Seattle, WA*
- Improved trading price extraction accuracy by over **20%** compared to the current pipeline by leveraging GPT-4o.
- Achieved **15%** accuracy improvement compared to the current pipeline by fine-tuning Mistral-7b with semi-supervised data.
- Constructed a hybrid method that reduced API costs by **50%** with less than **2%** accuracy drop.

Microsoft — Apr. 2022 – Nov. 2022
Research Intern — *Taipei, Taiwan*
- Unified transformer-based models into factored transformers with customized masking schedule and factor loss, and enhanced over **5%** accuracy rate in cross-lingual transfer learning by adding external knowledge in Wikipedia.
- Improved **3%** accuracy rate on the GLUE benchmark by jointly masking related factors during pre-training.
- Applied a masked language model loss to receipt field extraction, resulting in an improvement of over **10%** in F1-score.

Research Projects

Boosting Instruction Tuning with Multi-Model Paraphrasing [paper] — Apr. 2024 - Jun. 2024
Seminar Project | Advisor: Prof. Nanyun (Violet) Peng — *Los Angeles, CA*
- Improved Rouge-L score by over **15%** in generative tasks by incorporating paraphrased instruction data.
- Enhanced overall **10%** Rouge-L score by incorporating paraphrased sentences from different LLMs, such as Llama3, and GPT-4o.

Knowledge Distillation & K-means Clustering for Lang-Image Pre-Training [paper][code] — Sep. 2023 - Dec. 2023
Seminar Project | Advisor: Prof. Nanyun (Violet) Peng — *Los Angeles, CA*
- Guided both CLIP text and image encoders with Llama2 using offline K-means clustering labels and embedding distillation.
- Attained a **9%** improvement in Exact Match (EM) over the pre-trained CLIP's text encoder on the CC3M dataset and enhanced image attribute capturing accuracy by **1%** with the proposed image encoder on the AWA2 dataset.

Exploring Efficient-tuning Methods in Self-supervised Speech Model [paper] — Jun. 2022 - Aug. 2022
JASLT's Team Member [website] | Advisor: Prof. Hung-yi Lee, Dr. Shang-wen (Daniel) Li — *Baltimore, MD*
- Collaborated with **5+** researchers from Meta, MIT, Stanford, and NTU to bridge the gap in Parameter-efficient Fine-tuning methods between Natural Language Processing and Speech.
- Achieved over **90%** parameter reduction while maintaining comparable performance on the SUPERB benchmark.

Parameter-efficient Token-dependent Adapter in NLP Tasks [paper][code] — Oct. 2020 - Aug. 2022
NTU Research Assistant | Advisor: Prof. Hung-yi Lee — *Taipei, Taiwan*
- Introduced the AdapterBias, containing only **0.02%** parameters of the conventional adapter, yet delivered a significant **3.1%** improvement in Matthews correlation on the CoLA dataset.
- Reduced over **99.95%** in trainable parameters compared with Fine-tuning a whole Large Language Model while experiencing an accuracy decrease of **1%** on the GLUE benchmark.

Publications

[1] **Chin-Lun Fu***, Zih-Ching Chen*, Yun-Ru Lee, and Hung-yi Lee. "AdapterBias: Parameter-efficient Token-dependent Representation Shift for Adapters in NLP Tasks," Findings of the Association for Computational Linguistics: **NAACL 2022**.

[2] **Chin-Lun Fu***, Zih-Ching Chen*, Chih-Ying Liu, Shang-Wen Li, and Hung-yi Lee. "Exploring Efficient-tuning Methods in Self-supervised Speech Models," The 2022 IEEE Spoken Language Technology Workshop: **SLT 2022**.

[3] **Chin-Lun Fu***, Zih-Ching Chen*, Lin-Hsi Tsao*, Shang-Fu Chen, and Yu-Chiang (Frank) Wang. "Learning Facial Liveness Representation for Domain Generalized Face Anti-Spoofing," IEEE International Conference on Multimedia and Expo: **ICME 2022**.

Technical Skills

Programming: Python, C/C++, HTML/CSS, LaTeX, MATLAB, Verilog
Operating Systems: Linux, Windows
Frameworks & Tools: Pytorch, Tensorflow, Keras, Git, OpenCV, Cuda