Yu-An Su

https://b10815061.github.io/ c111mo600@gmail.com

Education

National Taiwan University of Science and Technology (NTUST) Taipei, Taiwan
B.S. in Computer Science and Information Engineering Sep 2019 - Jun 2023

- ***Last 60 GPA*** : 4.22/4.3 , ***Overall GPA***: 3.84/4.3

Publications

[1] Wei-Hsin Yeh, Pei Hsin Lin, **Yu-An Su**, Wen Hsiang Cheng, and Lun-Wei Ku. "MAAIG: Motion Analysis and Instruction Generation". *Proceedings of the 5th ACM International Conference on Multimedia in Asia Workshops*, 2024 (**Co-first author, Oral Presenter**)

[2] **Yu-An Su**, Wei-Hsin Yeh, Chih-Ning Chen, Calvin Ku, Eugene Lalis Sy, Yi-Hsueh Lin, Min-Chun Hu, Wen-Hsin Chiu, and Lun-Wei Ku. "LIVE: LIne Virtual Educator and Annotation System for Sports Analysis and Guidance". *Under submission to The 31st International Conference of Computational Linguistic Demo Track*, 2025

[3] **Yu-An Su**, Wei-Hsin Yeh , Chih-Ning Chen, Yi-Hsueh Lin, Calvin Ku, Min-Chun Hu, and Lun-Wei Ku. "CoachMe: Decoding Sport Elements with a Reference-Based Coaching Instruction Generation Model". *Under submission to The 39th Annual AAAI Conference on Artificial Intelligence*, 2025

[4] Jian-Jia Weng, Calvin Ku, Jo Chien Wang, Chih-Jen Cheng, Tica Lin, **Yu-An Su**, Tsung-Hsun Tsai, You-Yi Lin, Hung-Kuo Chu, Min-Chun Hu, and Lun-Wei Ku. "Bridging Coaching Knowledge and AI Feedback to Enhance Motor Learning in Basketball Shooting Mechanics Through a Knowledge-Based SOP Framework". *Under submission to The ACM CHI conference on Human Factors in Computing Systems*, 2025

Research Experience

Natural Language Processing and Sentiment Analysis Lab, Academia Sinica Taipei, Taiwan
Advisor: ***Dr. Lun-Wei Ku, Research Fellow, Institute of Information Science*** Mar 2023 - Present
Project: Precise Sport Educating System

- Proposed a framework for human pose analysis and description generation, achieving a BLEU-4 score of 24.3 and BERTScore of 45.1, outperforming state-of-the-art methods on HumanML3D dataset
- Utilized latent embedding to compare human poses of learners and athletes, resulting in the first framework in the world to generate instructions for sport guidance

Project: Taiwan VLM

- Orchestrated a data pipeline to preprocess 50M online and closed source documents, including 3B word tokens
- Developed Taiwan's first vision-language model through alignment of ViT visual encodings with Llama3 (70B), leveraging tensor parallelism for distributed training on Mandarin datasets

Work Experience

Institute of Information Science, Academia Sinica (Taiwan's National Academy) Taipei, Taiwan
Research Engineer Mar 2023 - Present
Precise Sport Educating System

- Architected a data collection platform leveraging LINE webhook, Vue, MongoDB, Node.js, and Docker
- Constructed audio/text to video synchronization system for annotators to label data and for researchers to easily process data
- Streamlined data preparation process to automatically track main character, perform bounding box cropping, align with reference, and calculate skeleton-based similarity
- Built human evaluation platform for post verification of proposed model with React, Node.js, and Docker

International Games System & NTUST (industry-academia collaboration) Taipei, Taiwan
Research and Development Intern Sep 2022 - Feb 2023

- Engineered an automatic framework powered by OpenCV to validate a web game
- Fine-tuned an OCR model for web application's specific number font, increasing accuracy from 88% to 92%

Trend Micro Taipei, Taiwan
Research and Development Intern Jul 2022 - Aug 2022

- Implemented Autoencoder to detect outliers in hardware usage, reducing time of testing product by 33%
- Integrated GitHub Actions and Docker image to automatically deploy test codes

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Awards & Grants

Academic Excellence Award, NTUST Fall 2022, Spring 2023
- Received for academic excellence, ranking 3rd and 1st among 103 students in the last 2 semesters

Enterprise R&D Deep Plowing Project, Ministry of Economic Affairs Oct 2024
- 1 of 4 DGX proposals selected by NVIDIA TAIPEI-1 Computing Power Review Committee to participate in national initiative to advance AI research and development in Taiwan
- Received access to "Taipei-1" supercomputer computing resources provided by NVIDIA's AI Innovation R&D Center

Teaching Experience

Chang Gung University, ***Advanced Natural Language Processing*** New Taipei, Taiwan
Teaching Assistant Mar 2024 & Oct 2024
- Conducted lab classes on BERT, guiding participants in developing sentiment analysis models on their own datasets and instructed students on their final projects
- Lectured concept of RAG implemented with LangChain and Llama (served locally with ollama), direct lab class on detailed implementation. Designed interactive visualization of contrastive learning for embedding models to help understanding

MediaTek, ***Natural Language Processing*** HsinChu, Taiwan
Laboratory Instructor Mar 2024
- Delivered lab and lecture on LLaMA, explaining concepts and applications of RMSNorm, Rotary Embedding, and KV cache
- Prepared interactable Rotary Embedding and lab exercises to enhance student understanding

Selected Course Projects

Virtual Room Reservation Assistant, ***Software Engineering*** Sep 2021 - Dec 2021
- Built a website for room reservation with React, Redux, JWT, and Golang
- Integrated Google Authentication for website login

NachOS, ***Operating System*** Sep 2021 - Dec 2021
- Designed a resource-limited system based on NachOS
- Implemented scheduling policies (RR, FCFS, Priority, SJF) and memory swapping (LRU, FIFO, Random)

Compiler, ***Compiler Design*** Mar 2022 - Jun 2022
- Engineered lexical analysis with Lex to tokenize and parse customized syntax
- Leveraged Yacc to create a parser and link parsed code into functions
- Produced Java code using Java Runtime Environment and Java Bytecode Assembly

Information Retrieval Competition, ***Information Retrieval*** Sep 2022 - Dec 2022
- Coded expectation-maximization and probabilistic latent semantic analysis from scratch as probability-based methods, fine-tuned BERT as embedding-based retrieval

Real-Time Priority Optimization Communicating App, ***Special Project for CSIE*** Mar 2022 - Dec 2022
- Optimized Telegram's chat priority with real-time algorithm based on transformer, hosted with Amazon Web Services

Relevant Skills

Programming Languages: Python, C, C++, Go, Node.js, SQL, KQL, Shell, TeX
Infrastructure & Platforms: MongoDB, Docker, Azure, AWS, GCP, Slurm
Frameworks: Pytorch, TensorFlow, Vue, React, Megatron, Ollama, LangChain

Extracurricular Activities

Member, Student Association of Computer Science Department, NTUST Sep 2020 - Jun 2021
- Led coordination of social evening with 8 other universities and assisted in organizing several other events

Member, Google Developer Student Community, NTUST Sep 2022 - Jun 2023
- Participated in multiple classes/seminars, including Google Gen AI and Cloud Computing