

CHUN-MAO (MICHAEL) LAI

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EDUCATION

University of Illinois Urbana-Champaign

Exchange Program in Electrical and Computer Engineering

Urbana, IL

Aug 2023 – Dec 2023

National Taiwan University

B.S.E. in Electrical Engineering

Taiwan

Sep 2020 – Jun 2024

- GPA: 4.2/4.3; Received one Presidential Award and 2023 NTUEE Undergraduate Innovation Award (3rd Prize)

TECHNICAL SKILLS

Machine Learning Natural Language Processing, Computer Vision, Reinforcement Learning, Robotic Learning
Programming Python, C, HTML/CSS, Javascript/Typescript, SQL, LaTeX
Libraries Pytorch, Tensorflow, Huggingface, React, NextJS, expressJS, Flask, GraphQL
Softwares Git, Conda, Docker, Linux, MacOS
Spoken Languages Mandarin Chinese (Native), English (Fluent)

WORK EXPERIENCE

Taiwan Semiconductor Manufacturing Company(TSMC)

Taiwan

Machine Learning Research Engineer Intern

Jun 2023 – Jul 2023

- Designed a pairwise style transfer model for defect detection in extremely high-resolution images (up to 3M pixels) and achieved an impressive maximum residue error of 0.1.
- Enhanced the data pipeline by implementing MPI for image extraction and preprocessing, reducing processing time by 75%.
- Implemented distributed computing for a TensorFlow model, harnessing the power of 2 nodes, each equipped with 4 A100 GPUs, to significantly boost processing efficiency.

PUBLICATIONS

Diffusion Model-Augmented Behavioral Cloning

Co-Author

The Frontiers4LCD International Workshop on Diffusion Models (ICML Workshop 2023)

July 2023

- Designed a distinctive learning objective, harnessing diffusion models to guide policy learning and achieving superior performance in continuous control domains. (<https://nturobotlearninglab.github.io/dbc/>)

Controllable User Dialogue Act Augmentation for Dialogue State Tracking

First Author

The 23rd Annual Meeting of the Special Interest Group on Discourse and Dialogue (SIGDIAL 2022)

Sep 2022

- Introduced a data-augmented framework to diversify user utterances, enhancing state trackers' robustness and achieving state-of-the-art performance in dialogue state tracking, specifically on MultiWOZ 2.1. (<https://arxiv.org/abs/2207.12757v1>)

AV-SUPERB: A Multi-Task Evaluation Benchmark for Audio-Visual Representation Models

Co-Author

2024 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2024, Under Review)

- Constructed a benchmark for audio-visual representation learning, including 5 speech and audio processing tasks and 7 datasets, to facilitate the development of audio-visual models. (<https://av.superbbenchmark.org/>)

EXTRACURRICULAR ACTIVITIES & LEADERSHIP

National Taiwan University Electrical Engineering Light Dance

Taiwan

Software Leader, <https://www.youtube.com/@ntueelightdance6849>

Sep 2021 – Jul 2023

- Built the backend service from scratch, enabling the storage of light dance data (up to 5GB) on a server.
- Designed the data structure for the entire light dance system, optimizing data querying and post-processing, resulting in a seamless user experience with no perceptible latency.
- Led a 25-member team responsible for maintaining the Light Dance editor service, overseeing a codebase of 800,000 lines.
- Achieved 36,000 views on YouTube for the Light Dance video in 2022.

NTUEE Student Association Information Department

Taiwan

Minister, <https://github.com/NTUEEInfoDep>

Sep 2020 – Jul 2023

- Led a team of 40 individuals in producing and maintaining student association websites and services, which included 8 long-standing services and various activity-based services, benefiting over 1,000 students.
- Offered technical courses to NTUEE students and trained department members in website and service development.
- Designed and implemented an algorithm based on stable marriage problem to ensure accurate distribution among 1,000 department students on a course pre-select website.
- Contributed to various departmental activities, including NTUEE Week, NTUEE Light Dance, MakeNTU, and more.

Special Awards

2016 International Junior Science Olympiad (IJSO)

- 3 individual gold medals: 1st Prize, Best Theoretical Winner, Best Overall Winner
- 1 team gold medal: Country Winner