CHUN-MAO (MICHAEL) LAI

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EDUCATION

University of Illinois Urbana-Champaign   **Urbana, Illinois**
Exchange Program in Electrical and Computer Engineering   Aug. 2023 – Dec. 2023
- Related Courses: Machine Learning, The Principles of Safe Autonomics, Distributed Systems

National Taiwan University   **Tainan, Taiwan**
B.S.E. in Electrical Engineering   Sep. 2020 – Jun. 2024
- GPA: 4.16/4.3; 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, Tailwind, ThreeJS, expressJS, GraphQL, Prisma, Flask
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 Rewards Guided Adversarial Imitation Learning   **First Author**
*2024 International Conference on Learning Representations (**ICLR 2024**)(Under Review)*   Feb. 2024
- Proposing a novel Adversarial Imitation Reinforcement Learning algorithm that outperform currently existing AIRL methods.

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**)*   Dec 2023
- 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
- 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.

SELECTED PROJECTS

NTUEE Course Pre-selection Website   **Taipei, Taiwan**
Project Leader, NTUEE Student Association Information Department   Jan 2021 – Jul 2023
- Enhanced the backend of the website to ensure the user experience, including the database, the API, and the distribution server.
- Designed and implemented an algorithm based on stable marriage problem to ensure accurate distribution among 1,000 department students with their preference and intricated rules of priorities.

NTUEE Light Dance Editor   **Taipei, Taiwan**
Backend Leader   Sep 2021 – Jul 2023
- Designed the data structure for the entire light dance system and built the backend service from scratch, focusing on optimizing data querying and post-processing to ensure a seamless user experience without noticeable latency.

AV-SUPERB   **Taipei, Taiwan**
Website Constructor and Maintainer   Sep 2021 – Jul 2023
- Constructed a benchmark website for audio-visual representation learning, including 5 speech and audio processing tasks and 7 datasets, to facilitate the development of audio-visual models.