Chun-Mao (Michael) Lai

858-373-7788 michaellai901026@gmail.com Chun-Mao Lai Mecoli1219 www.mecoli.net

EDUCATION

University of California San Diego **09/2024 – 06/2026**
MS. in Computer Science and Engineering *La Jolla, California*
- Courses: Operating Systems, Principles of Database Systems, Recommender Systems and Web Mining.

University of Illinois Urbana-Champaign **08/2023 – 12/2023**
Exchange Program in Electrical and Computer Engineering *Urbana, Illinois*
- GPA: 4.0/4.0; Courses: Distributed Systems, Machine Learning, The Principles of Safe Autonomics.

National Taiwan University **09/2020 – 06/2024**
BSE. in Electrical Engineering *Taiwan*
- GPA: 3.97/4.0; Five Machine Learning publications; One-time Dean's List recipient.
- The Member of Phi Tau Phi Scholastic Honor Society of the Republic of China.

SKILLS/QUALIFICATIONS

Programming	Python, C/C++, Javascript/Typescript, Golang, Swift, LaTeX, Bash
Web Development	HTML/CSS, React, NextJS, Tailwind, ThreeJS, NodeJS, ExpressJS, Swagger, GraphQL, Prisma, Flask
Data Analysis	MySQL, PostgreSQL, MongoDB, Redis
Machine Learning	TensorFlow, Keras, PyTorch, HuggingFace, Scikit-learn
Technology	Git, Linux, MacOS, Docker, Kubernetes, GoogleAPI, Spark, Ray, Flyte

WORK EXPERIENCE

Flyte (K8S Workflow Orchestration Platform For Data & ML Pipelines) **04/2024 – Present**
Open Source Contributor | *Go, Python, Docker, Kubernetes* *Remote*

Jupyter Notebook Support in Flytekit
- Enabled Jupyter notebook support in Flytekit, allowing users to develop and run code remotely from notebook cells. (PR: #2733)
- Implemented pickling techniques to solve Jupyter notebook serialization issues and created comprehensive integration tests.
- Collaborated with Union.ai and open-source community to refine system design. (PR: #2799)

Tuple & NamedTuple Support in Flyte System (On-going)
- Proposed a new RFC (#5699) to support Tuple and NamedTuple in Flyte, detailing design changes and system-wide impact.
- Designed a new protobuf message in FlyteIDL to support tuple-type data transfer between Flyte components. (PR: #5720)
- Enabled Flyte's client libraries (Flytekit and Flytectl) to handle tasks and workflows using Tuple and NamedTuple inputs/outputs. (PR: #2732)
- Implemented logic in Flytekit to support Tuple iteration and aggregation within workflow definitions.

Selected Contributions
- Enabled default labels and annotations for the launch plans automatically created from workflow definitions. (PR: #2776)
- Introduced a bypass for strict type validation in Flytekit, simplifying codebase migration and enhancing flexibility for new users. (PR: #2419)
- Resolved issues with the Any type in Flytekit, enabling proper usage via the command line using the Click package. (PR: #2463)

Appier **06/2024 – 08/2024**
AI Research Scientist Intern *Taiwan*
- Enhanced machine learning algorithms in a recommendation system using Diffusion Models to address data inefficiency and imbalance, reducing performance drop by 25%.

Taiwan Semiconductor Manufacturing Company(TSMC) **06/2023 – 07/2023**
Machine Learning Research Engineer Intern | *Python, C, SQL, TensorFlow* *Taiwan*
- Designed and developed an innovative pairwise Style Transfer model for super-resolution images (3M pixels per image), resulting in a 50% reduction in error rates.
- Optimized the data pipeline with Python MPI for image extraction and processing, achieving a 75% reduction in processing time.
- Implemented TensorFlow distributed computing across 2 nodes with 4 A100 GPUs each, boosting training efficiency by 5 times.

EXTRACURRICULAR ACTIVITIES & LEADERSHIP

NTUEE Light Dance **09/2021 – 07/2023**
Software Leader, https://www.youtube.com/@ntueelightdance6849 *Taiwan*
- Led a 25-member team responsible for developing the Light Dance editor service, managing a substantial codebase of 800,000 lines.
- Built the backend service from scratch to facilitate the storage of light dance data (up to 5GB) on a server and provide a co-editing environment.
- Optimized data structure with SQL-based database, reducing client-side latency to less than 1 second per operation.
- Achieved significant visibility with 40,000 views on YouTube for the Light Dance video in 2022.

PUBLICATIONS

[1] "Diffusion-Rewards Adversarial Imitation Learning", NeurIPs 2024 **(First Author)**

[2] "Diffusion Imitation from Observation", NeurIPs 2024

[3] "Diffusion Model-Augmented Behavioral Cloning", ICML 2024

[4] "AV-SUPERB: A Multi-Task Evaluation Benchmark for Audio-Visual Representation Models", ICASSP 2024

[5] "Controllable User Dialogue Act Augmentation for Dialogue State Tracking", SIGDIAL 2022 **(First Author)**