Kuan Heng (Jordan) Lin

kuanhenglin@ucla.edu | (424) 440-5778 | kuanhenglin | kuanhenglin.github.io

Skills

Research: Generative AI, computer vision, machine learning, optimization, explainability, image processing, natural language processing
Programming: `Python` (`PyTorch`, `TensorFlow`, `JAX`), `C++`, `C`, `Assembly`, `R`, `MATLAB`, `Rust`, `Haskell`, `React`, `Flask`, `JavaScript`, `HTML/CSS`

Education

Computer Science B.S., minor in Mathematics *September 2021–Present*
University of California, Los Angeles (GPA: 4.0, Dean's Honor List, Upsilon Pi Epsilon)
Coursework: Computer Vision, Graphics, Deep Learning, Algorithms & Data Structures, Imaging, Programming Languages, Software Construction, Quantum Computing, Systems, Theory, Logic Design, Linear Algebra, Analysis, Probability, Statistics, and more

Research

Publications | Generative modeling, computer vision, controllable generation, deep learning *December 2023–Present*
[1] Sicheng Mo, Fangzhou Mu, Kuan Heng Lin, Yanli Liu, Bochen Guan, Yin Li, and Bolei Zhou. "FreeControl: Training-Free Spatial Control of Any Text-to-Image Diffusion Model with Any Condition". In: *Computer Vision and Pattern Recognition (CVPR)*. 2024.

Undergraduate Researcher | Zhou Lab at UCLA *March 2023–Present*
- Inject temporal and instance consistency to Stable Diffusion and ControlNet vision models with inter-frame attention, simulation-in-the-loop conditioning, and NeRF 3D consistency for video generation, building large-scale `Python` + `PyTorch` benchmark programs.
- Develop novel methods for semantic latent space manipulation of diffusion models with deterministic and stochastic sampling, leveraging inversion to perform direct real-image editing and visualize diffusion latent guidance to measure dataset and model bias.

URC-Sciences Summer Program Scholarship Researcher | Zhou Lab at UCLA *June 2023–September 2023*
- Design first ever open-source human-in-the-loop video generator by extending Stable Diffusion with video guidance. *Ongoing.*

Undergraduate Researcher | The Ozcan Research Group (HHMI Program) *October 2022–Present*
- Design Fourier residual and attention blocks for diffusion autoencoders and generative adversarial networks for accurate and disentangled hologram reconstruction, super-resolution, and axial distance prediction at reduced network sizes.

Student Researcher | The Bouchard Lab at UCLA *April 2022–January 2023*
- Design and implement novel Levenberg–Marquardt optimizer for Hessian-free and Accelerated methods with back-propagation and Fourier methods in both `TensorFlow` and `PyTorch` with `CUDA` on distributive multi-stage training networks.

Conference Paper Co-author, Presenter | AIPR 2020 *April–November 2020*
- Published a conference paper examining political bias via social network feature extraction with named entity recognition.

Work Experiences

Program Development Team | UCLA CS, UCLA CAE, Learning Assistant Program *March 2023–Present*
- Optimize & automate LA application and review with Airtable `JavaScript` and Gmail scripting for 900+ applicants supporting 14000+ students in UCLA STEM courses, streamlining applicant review and communication for a downsized PDT team.
- Advertise the LA program to increase applicants for key CS courses by 500% and communicate with professors & administrators for high-demand courses (e.g., COM SCI 131) to be supported, empowering more students through collaborative and inclusive teaching.
- Lead weekly discussions and workshops for COM SCI 33: Computer Organization for 400+ students. Organize meetings, plan pedagogy activities and workshops, and host content meetings to mentor CS 33 LAs. Reviewed very positively by students and LAs.

Projects & Experiences

Co-President, Workshops Officer | ACM Student Chapter at UCLA, AI Committee *May 2022–Present*
- Host weekly reading groups that meet and discuss recent ML papers, such as deep generative vision, modern reinforcement learning, and federated learning, culminating in project and event ideas for general members such as the adversarial AI competition.
- Spearhead general member programs (e.g., special topics discussions) and bold initiatives (e.g., AI hackathons, research team, shared compute, inter-comittee collaborations) which drastically improved member retention, officer burnout, and club exposure.
- Revamp beginner track and advanced track workshop topics on machine learning topics such as gradient descent, automatic differentiation, `Python` package management, and utilizing `Python` notebooks, improving retention by 100%.

Hackathons | `PyTorch`, `TensorBoard`, `JavaScript`, `React.js`, `Flask`, `Solidity`, `Web3.js` *January 2022–Present*
- LA Hacks 2023 (Overall Third Place), people2vec: Social media platform powered by LLMs, CV, and YouTube watch histories that matches people by their media interests. Integrated sentence embeddings and `Inception V3` features for distribution analysis to compute interest similarity. Visualize user data with PCA "video cloud" to convey matched interests while preserving privacy.
- HackMIT 2022 (Blockchain for Society Second Place), Wikisafe: Crowd-sourced knowledge database powered by machine learning and blockchain for secure version management. Integrated fine-tuned text summarization, caption generation, and generative imagery `PyTorch` models and `Solidity` smart contracts on the Ethereum blockchain with `Web3.js` in a full-stack web application.

Full-stack Developer | T-Eggletop Map Creator *January 2022–Present*
- Created an online homebrew tabletop RPG map designer with `MongoDB`, `Express.js`, `React.js`, and `Node.js` to build, from scratch, full-stack APIs for user authentication, map structures, `MongoDB` database communication, front end interfaces, and map builder.