Kuan Heng (Jordan) Lin

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Skills

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

Education

Computer Science B.S., minor in Mathematics *September 2021–Present*
University of California, Los Angeles (GPA: 3.98, Dean's Honor List, Upsilon Pi Epsilon)
Coursework: Computer Vision, Deep Learning, Graphics, Algorithms & Data Structures, Imaging, Programming Languages, Software Construction, OS, Quantum Computing, Systems, Theory, Digital Design, Linear Algebra, Analysis, Probability, Statistics, and more

Research

Publications | Generative modeling, computer vision, controllable generation, deep learning *December 2023–Present*
[1] Kuan Heng Lin*, Sicheng Mo*, Ben Klingher, Fangzhou Mu, Bolei Zhou. "Ctrl-X: Controlling Structure and Appearance for Text-To-Image Generation Without Guidance". *arXiv*: 2406.07540 [cs.CV]. 2024.
[2] 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*
- Design fast training-free and guidance-free structure and appearance control for arbitrary text-to-image and text-to-video models.
- Develop training-free controllable generation methods via guidance and feature injection for Stable Diffusion (SD) and video diffusion models for image and video translation and stylization, building large-scale PyTorch + Diffusers pipelines and benchmarks.
- Explore semantic latent space manipulation of diffusion models, leveraging inversion to perform image editing latent guidance.
URC-Sciences Summer Program Scholarship Researcher | Zhou Lab at UCLA *June 2023–September 2023*
- Design a human-in-the-loop video generator by extending Stable Diffusion with video guidance and interactive grounded generation.
Undergraduate Researcher | The Ozcan Research Group (HHMI Program) *October 2022–June 2023*
- 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.

Work Experiences

Research Intern | Snap Inc. *June 2024–Present*
- Work in the Creative Vision team to optimize training and inference of large video generators with profiling, parallelism, and CUDA.
Program Development Team ← Head LA | 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 an increasing number of Head LAs.
- Advertise the LA program to increase applicants for CS courses by 300% and communicate with professors & admins for high-demand courses (e.g., COM SCI 111, 118, 131) to be supported, empowering more students through collaborative and inclusive learning.
- 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

Advisor ← Co-President ← Workshops Officer | ACM Student Chapter at UCLA, AI Committee *May 2022–Present*
- Founded weekly reading groups & seminars discussing recent ML advances such as generative vision, reinforcement learning, and LLMs with student & industry speakers, culminating in projects and events 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 and teach workshops on deep learning topics such as gradient descent, backpropagation, neural networks, CNNs, RNNs, Transformers, generative vision, Python package management, and hands-on 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.