David McAllister

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RESEARCH INTERESTS

Diffusion Models, 3D Computer Vision, Computational Imaging, Neural Rendering

EDUCATION

University of California, Berkeley   August 2024 -
PhD in EECS
Research Advisor: Angjoo Kanazawa (BAIR)

University of California, Berkeley   August 2023 — May 2024
Master of Science in EECS
Research Advisor: Angjoo Kanazawa (BAIR)

University of California, Berkeley,   August 2019 — May 2023
Bachelor of Science in EECS   Cumulative GPA: 3.92 / 4.0

EXPERIENCE

Luma AI   Palo Alto, CA
Research Scientist Intern   Summer 2024

- Developed Decentralized Diffusion Models to scale diffusion model pretraining across many independent GPU clusters.

Berkeley AI Research   Berkeley, CA
Graduate Student Researcher   August 2023 — May 2024

- Funded M.S. researcher working on generative models and 3D computer vision
- Developer for Nerfstudio open source repository, with over 200 contributors and 9000 GitHub stars

UC Berkeley Computational Imaging Lab   Berkeley, CA
Undergraduate Researcher   January 2022 — August 2023

- Researcher in Prof. Laura Waller's lab focusing on computational abberation correction
- Published two papers—*Ring Deconvolution Microscopy* and *SeidelNet*

DoorDash   San Francisco, CA
Machine Learning/Software Engineering Intern   Summer 2022, Summer 2023

- Engineered new distributed LLM training and inference infrastructure to develop and deploy across dozens of GPUs
- Trained novel transformer-based restaurant recommendation algorithm, outperformed previous algorithm in accuracy and diversity
- Prototyped personalized notification message generation by fine-tuning QLoRA Llama 2 large language model

PUBLICATIONS

1. **D. McAllister***, M. Tancik, J. Song, A. Kanazawa, "Decentralized Diffusion Models" — arXiv
2. **D. McAllister***, S. Ge*, J. Huang, D. Jacobs, A. Efros, A. Holynski, A. Kanazawa, "Rethinking Score Distillation as a Bridge Between Image Distributions" — arXiv
3. E. Whang*, **D. McAllister***, A. Reddy, A. Kohli, and L. Waller, "SeidelNet: an aberration-informed deep learning model for spatially varying deblurring", in *AI and Optical Data Sciences IV. Vol. 12438. SPIE, 2023* — Link
4. A. Kohli*, A. Angelopoulos*, **D. McAllister**, E. Whang, S. You, K. Yanny, and L. Waller, "Ring Deconvolution Microscopy" — arXiv
5. M. Tancik*, E. Weber*, E. Ng*, R. Li, B. Yi, J. Kerr, T. Wang, A. Kristoffersen, J. Austin, K. Salahi, A. Ahuja, **D. McAllister**, and A. Kanazawa, "Nerfstudio: A Modular Framework for Neural Radiance Field Development", in *ACM SIGGRAPH 2023 Conference Proceedings* — arXiv

TEACHING

CS 184: Computer Graphics and Imaging   Spring 2023
Teaching Assistant

- Taught review sessions, project parties and office hours
- Expanded website features to improve lecture content discussions between students and staff
- Developed video content for exam preparation and course content review

SELECTED COURSES

Master's Courses

- Statistical Learning Theory
- Computational Color Theory
- Applications of Parallel Computers

Bachelor's Courses

- Computer Vision and Computational Photography
- Computer Graphics and Imaging
- Introduction to Machine Learning
- Probability and Random Processes
- Operating Systems and System Programming

REFERENCES

Prof. Angjoo Kanazawa
Assistant Professor, EECS, University of California, Berkeley
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Personal Web Page — Google Scholar

Prof. Laura Waller
Professor, EECS, University of California, Berkeley
E-mail: waller@berkeley.edu
Lab Web Page — Google Scholar

Dr. Zidong Yang
Machine Learning Engineer, DoorDash Inc.
E-mail: zidong.yang@doordash.com
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