Shamus Li

Computational Imaging Researcher
Technical expertise in optics, machine learning, and design

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University of California, Berkeley

MS, EECS (Aug 2023 —May 2024); GPA: 4.0/4.0
Advisor: Prof. Laura Waller
BS, EECS (Aug 2020 — May 2023): GPA: 3.88/4.0

Selected coursework:
- *Deep Reinforcement Learning*
- *Computational Imaging*
- *Computer Vision and Computation Photography*
- *Computational Color/Graphics*
- *Signals and Systems*
- *Optical and Neural Limits to Vision*
- *Computer Architecture (TA)*

Computational Color @ Berkeley
Graduate Researcher (Aug 2023 — Present)

- Developing computational neuroscience model to simulate and evaluate notch-filter glasses for amplifying color perception in humans.
- Collaborating with teams in Vision Science and Cognitive Science.

Score AI
June 2023

- Leveraged GPT-4 and MusicGen to build a sophisticated music generator capable of melody and musical motifs with no length limits.
- Prototyped a website that automatically generates music for poems, journals, and screenplays.

Computational Imaging Lab
Graduate Researcher (Jan 2021 — Present)

NeRF Light Field Camera
- Developed neural radiance field light field camera prototype using the plenoxels model, achieving high fidelity, single-shot reconstructions without neural networks.
- Created light field optics model using Zemax OpticStudio.

RSDiffuserCam
- Designed and fabricated a lensless camera able to reconstruct video from a single exposure, improving results by 20% compared to state-of-the-art methods.
- Prototyped a lensless hyperspectral imaging system capable of recovering a high-resolution datacube from a single exposure.
- Wrote a GPU-accelerated FISTA algorithm implementation for sparse image deconvolution, increasing reconstruction speed by 12x while reducing image noise.
- Created a LED array testbed that enables rapid prototyping across a range of optical imaging systems.

Cinematic Arts and Production Club
President (Jan 2022 — Present)

- Scaled the club from 20 to 150 active members in 2 years, becoming the largest film organization at Berkeley.
- Handled $20k in year-to-year cash flow.
- Organized film festivals with over 1,500 yearly attendees.

Work Experience

Lawrence Berkeley National Lab
Research Intern (Oct 2022 — Aug 2023)

- Wrote a real-time semantic segmentation pipeline for 3D cell volumes, surpassing single-structure segmentation found in state-of-the-art systems.
- Reduced segmentation time from days to minutes.
- Created an adaptive brush for organelle detection, an intuitive interface that improved usability and efficiency (>10x) compared to traditional thresholding techniques.
- Worked on an convolutional neural network-based encoder for 3D volume features, improving classification accuracy by 50%.
- Designed a scientist-in-the-loop tools for rapid 3D image processing, working with scientists across disciplines.
- Presented work to National Center for X-Ray Tomography (NCXT) leadership as well as at LBNL Molecular Biophysics & Integrated Bioimaging conference.
- First undergraduate student to work at NCXT.

Meta
VR Instructor (Jun 2023 — Aug 2023)

- Developed and taught a course on advanced VR experience design and development in partnership with Mission Bit.
- Worked with the State & Local Policy team to host events to teach students in the Bay Area.

Palo Alto Research Center
Research Intern (Jun 2022 — Aug 2022)

- Designed a workflow to efficiently visualize thermal properties in large buildings using multimodal imaging.
- Implemented end-to-end sensor fusion pipeline using Bluetooth Low Energy and MQTT, enabling real-time room temperature & humidity control.
- Created iOS app to automatically visualize sensor data in a 3D environment using augmented reality (ARKit and HoloLens 2), significantly improving user experience compared to existing methods.
- Papers published by IBPSA Building Simulation conference.