

# Daniel Lohn

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## Education

University of California, Santa Barbara

- M.S. in Computer Science (ongoing, estimated 2024)
- B.S. in Computer Science (graduated, 2023)
- College of Engineering Honors Program
- Relevant Coursework: Deep Learning, Computer Vision, Computer Graphics, Adv. Rt Rendering, Offline Rendering

## Research Interests

- Computer Vision, Computer Graphics, Machine Learning.
- Virtual, Augmented, and Mixed Reality.
- Diffusion Models, generating both 2D and 3D content.
- 3D reconstruction, Multi-View Stereo, Monocular depth estimation.
- NeRF models, and editing content captured by NeRFs.

## Projects *(View more info and my full list of projects at daniellohn.com)*

### **3DSTAR** – 3D Style Transfer in AR

*Mar 2023 – Jun 2023*

- Integrated Meta AI's Segment Anything Model (SAM) with a Mobile AR interface to allow users to segment a real object and send video frames of the isolated object to a 3D reconstruction system to obtain a textured mesh.
- Applied Text-To-Image diffusion model Stable Diffusion to restyle NeRFs, Near-Surface Light Field models, and reconstructed 3D meshes according to a given text prompt.

### **Near-Surface Light Fields** – Parametrizing a light field using an object's texture coordinates.

*Sep 2022 – Mar 2023*

- Wrote, trained, and finetuned models predicting opacity and RGB color on the surface on an object given a viewing direction and texture coordinates.
- Wrote Python scripts to process smartphone videos into standard data formats used for training NeRF-like models.

### **H2GO UCSB** – Android app for locating and rating drinking water on the UCSB campus.

*May 2022*

- Used Android Studio, the Kotlin programming language, and an as-of-yet undecided database to create an Android application with both mapping and social media features.
- Assembled team of student developers and implemented multiple map images, Google Sign-On.

### **Plenoxels + CLIP** – Optimizing a 3D voxel grid to resemble a text prompt

*Jan 2021 – April 2021*

- Translated a 3D voxel grid and volumetric rendering system from JAX to PyTorch. Added the ability to optimize the voxel grid to resemble image features generated from a text prompt using OpenAI's CLIP model.
- Experimented with different scene representations and loss functions to improve the quality of generated 3D models.

## Publications

Pranav Acharya\*, Daniel Lohn\*, Vivian Ross\*, Maya Ha, Alexander Rich, Ehsan Sayyad, and Tobias Höllerer. "Using Synthetic Data Generation to Probe Multi-View Stereo Networks," In *Proceedings of the International Conference on Computer Vision (ICCV)*, 2021, pp. 1583–1591.

## Experience

### **Software Engineering Intern** – Arista Networks, Santa Clara, CA

*June 2022 – Sep 2022*

- Built a benchmarking tool to monitor the query performance of a vital backend component of a web application for managing, monitoring, and automating deployments of network switches.
- Used Golang, Docker, Kubernetes, gRPC, and Git to add new functionality and tests to cloud applications.

### **Computer Vision Student Researcher** – UC Santa Barbara

*Sep 2020 – Aug 2021*

- Developed a tool in the Unity game engine to load 3D indoor scene datasets and generate synthetic data for CV tasks.
- Used tool to generate RGB images, depth maps. Used data as input to five pre-trained 3D reconstruction networks.
- Wrote up how variation of the data impacts network performance, paper accepted to ILDAV workshop at ICCV 2021.

### **Data Science Intern** – UC Santa Barbara Data Science Club

*Oct 2019 – Mar 2020*

- Provided assistance to small teams of students working on their own projects involving data collection and analysis.
- Assisted teams with data collection by writing Selenium scripts to scrape and archive data from web sources.
- Presented final project to a large audience of fellow students and a review panel.

## Honors and Awards

- **Dean's Honors Recipient, 6 Quarters** – Awarded to students with a GPA of 3.5 or higher
- **SigNN** – Winner, Best Overall, UCSB Data Science Project Showcase

*June 2021*

*June 2020*