ABHIK AHUJA

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EDUCATION

University of Cambridge June 2024
Master's Advanced Computer Science
Focus: Deep Learning, 3D Computer Vision, Multi-View Geometry
Thesis: An efficient 3D scene representation using 3D Gaussian splatting and environment maps

University of California, Berkeley May 2023
Bachelor's Computer Science, Bachelor's Mathematics
GPA: 3.85/4.0 (Distinction)
Focus: Machine Learning, Computer Vision, 3D Scene Reconstruction

EXPERIENCE

Zoox June 2024 – Present
3D Reconstruction Engineer *Foster City, CA*

Berkeley AI Research Lab (BAIR) July 2022 – September 2023
Software Developer / Machine Learning Researcher *Berkeley, CA*

- Built text-to-3D **generative AI** models using Neural Radiance Fields (NeRF) and 2D Diffusion models for Nerfstudio, a modular **open-source Python** NeRF repository (Co-authored paper, published SIGGRAPH '23).
- Implemented 9 new features in 3D NeRF visualizer (**React**, **Three.js**) and backend for creative users, including camera path editing, saving, and FOV interpolation (dolly zoom) for video renders and VFX.
- Work used by major industry players including Netflix, Lucasfilm, BBC, etc. with over 8k stars on GitHub.

Amazon May 2022 – August 2022
Software Development Engineer Intern *Seattle, WA*

- Reduced deployment time by over 300% by designing and building **AWS CI/CD** pipeline, automating product release process and enabling seamless rollbacks.
- Engineered custom software versioning infrastructure to facilitate rapid product iteration for enterprise partners and improve scalability to new customers.
- Utilized **AWS Lambda** (**Java**) to store minified product updates in **DynamoDB** to track and modify product releases.

UC Berkeley SLICE Lab October 2020 – May 2022
Programming Languages Researcher *Berkeley, CA*

- Co-authored paper for automatic bug repair in Verilog code using SMT solvers (accepted, ASPLOS '24).
- Wrote compiler pass in **Scala** to automate repair of logical loops in circuit designs, enabling automatic translation between hardware description languages.
- Translated RISC-V CPU from Verilog to Chisel, conducted **unit testing**, and presented work during lab showcase.

CDK Global June 2021 – August 2021
Software Engineering Intern *San Jose, CA*

- Accelerated software testing by 400% by creating **React** app to manage and streamline testing workflow.
- Utilized **PostgreSQL** database to interface projects fetched from Jira API with 100s of internal testing services.

PROJECTS

- **Home Lab**: Manages self-hosted services including calendar, document storage, website analytics, and more behind reverse proxy on personally-maintained **Linux** server (**Docker**, **Nginx**, **Apache**).
- **Instruct-NeRF2NeRF4D**: Text-guided editing of 4D (dynamic) NeRF models. Uses iterative dataset updates by a 2D text-image Diffusion model to gradually edit a dynamic NeRF (**Python**, **PyTorch**).
- **CUT-Video**: Researched and implemented method using **GANs** to translate video game frames to photorealistic visuals. Added contrastive loss to reduce artifacts and improve quality, significantly outperforming baseline results (**Python**, **PyTorch**).
- **VRNeRFs**: Developed VR viewer for NVIDIA's Instant-NeRF library. Translated movements and position of VR headset into NeRF camera-space to render a NeRF in stereo 3D (**Python**, **OpenVR**).

SKILLS

- **Languages**: Python, Java, Typescript/Javascript, Scala, C, C++, SQL, OCaml, HTML, CSS, LaTeX
- **Technology**: PyTorch, NumPy, React, Node.js, Flask, JQuery, Three.js, Next.js, Linux/UNIX, Docker, Git