Abhik Ahuja

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EDUCATION

University of Cambridge

June 2024

Master's Advanced Computer Science

Result: Distinction

Focus: Deep Learning, 3D Computer Vision, Multi-View Geometry

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

Zoox3D Reconstruction Engineer

June 2024 – Present

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

Seattle, WA

Software Development Engineer Intern

- 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

Berkeley, CA

Programming Languages Researcher

- 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, IATEX
- Technology: PyTorch, NumPy, React, Node.js, Flask, JQuery, Three.js, Next.js, Linux/UNIX, Docker, Git