Jason Dang

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EDUCATION

University of California, Berkeley | Bachelor's in Computer Science, Data Science *Aug. 2021- May 2024*

- Cumulative GPA: 3.7/4.0
- Upper Div. (CS) GPA: 3.95/4.0
- *Relevant Coursework: Algorithms, Operating Systems, Machine Learning, Artificial Intelligence, Databases, Data Structures, Computer Graphics*

EXPERIENCE

Apple

iOS & watchOS Technical Intern *Sacramento, CA*

- Demonstrated strong research and problem-solving skills by investigating and logging relevant cases in AppleCare's database to resolve high-level technical issues.
- Exhibited strong leadership and teamwork by coordinating with a team of ten interns in weekly meetings to ensure that everyone was using the latest resolution methods.
- Maintained **90%+** customer satisfaction rating based on post-support surveys of **100+** users.

PROJECTS

Lights, Camera, Dungeon | *GoDot 4, GDScript, Aseprite, Crocotile3D*

- Developed 2.5D bullet-hell warped crawler game with 2D sprites rendered in a 3D environment.
- Implemented custom shaders for dynamic camera effects, projectiles, character models by altering per-vertex and per-fragment operations in GoDot's scripting language.
- Designed unique thin-lens mechanic derived from Gaussian ray tracing where projectiles passing through the lens are refracted based on the incident angle and lens shape, altering their trajectory.
- Optimized rendering performance by **~300%** through refactoring database to adapt to Jolt's physics engine which resulted in smooth **60 frames per second** gameplay even during intense bullet-hell sequences.
- Earned final showcase winner (of 80 teams) in CS 184 competition, turned into a standalone executable displayed onto itch.io.

Physically Based Rendering | *C++*

- Worked in a physically based rendering system, implementing the full rendering pipeline including ray tracing, shading, and global illumination.
- Implemented a bounding volume hierarchy (BVH) spatial acceleration structure to speedup rendering times from **2+** minutes to **<1s.**
- Furthered BVH using the surface area heuristic (SAH) tree construction algorithm, adaptively subdividing volumes based on surface area to minimize expected ray intersection costs. Reduced number of intersection tests per ray from **thousands** (without SAH) to **~2.5**.
- Simulated realistic light transport using Monte Carlo path tracing with multiple importance sampling and Russian Roulette for efficient unbiased global illumination.

AR Furniture Visualizer | *ARKit, Swift, Scenekit*

- Developed an augmented reality mobile app that allows users to visualize furniture and home décor in their own space before purchasing.
- Integrated with backend RESTful APIs to fetch furniture product data, dynamically loading corresponding 3D models, materials, and metadata into app, enabling users to access and visualize a wide range of furniture options from retailer's catalog.

Integrated Banking | *MongoDB, Express.js, React, Node.js, Plaid*

- Engineered a web platform that empowers users to securely link their bank accounts through Plaid API to track transactions in a unified dashboard.
- Implemented authentication using JSON web tokens and bcrypt for secure password hashing.
- Deployed onto AWS cloud platform with automated CI/CD pipelines for streamlined development and deployment workflow.

TECHNICAL SKILLS

Languages: Java, JavaScript, TypeScript, C/C++, HTML/CSS, SQL, Python, Swift, GD Script

Frameworks: Node.js, React, Plaid, Express.js, Scikit-Learn

Libraries: Numpy, Matplotlib, BeautifulSoup, OpenCV, CGL