DHARSHAN VISHWANATHA

dhvishwa@ucsd.edu | (626)-215-9113 | dharshanv.github.io

EDUCATION

University of California, San Diego (Aug 2019 - Dec 2020)

BS, Mathematics / Computer Science

- GPA 3.65 - **Provost Honors** (Fall 2019, Spring 2020). **iLead program** - certified.
- Courses: Advanced Data Structure, Graph Theory, Numerical Analysis, Theory of Computability, Mathematical Reasoning, Statistical Methods, and Abstract Algebra.

Pasadena City College (Aug 2017 - June 2019)

AS, Computer Science

- GPA 3.8 - **Dean's Honor** for all semesters. Awarded **Honors in Mathematics**.

SKILLS

- C++, Java, C#, Python, OpenGL, OpenCV, CUDA, Jenkins, Continuous Deployment, Linux, Git, REST API, Qt Frameworks, openFrameworks, JSON, Neo4j, LaTeX, HTML, CSS, JavaScript.

Student Organizations

CalTech FSAE (Oct 2019 - Dec 2019)
- Worked with the CalTech FSAE team on building an electric autonomous racecar.
- I quickly prototyped detecting cones and distance from Kinect's camera, and displayed depth using OpenCV.
- Due to quick prototyping, we learned that the sun's uv-lights cancels out the Kinect's infrared sensor. Making the use of Kinect useless in competition, and looked towards LiDAR.
- Tools used: OpenCV, Contour's, openFrameworks, and ofxKinect.

Publication

Ray Tracer - Simple Introduction (Oct 2019 - Dec 2019)
- Published a book (link: rb.gy/ex8n8y). Step-by-step, in-depth and overarching on the basics of ray tracing.
- Includes mathematical foundations, code implementations, documentation, and rendered images.

PROJECTS

Ray Tracer (C++, Aug 2019 - June 2020)
- A simple Ray Tracer with basic geometry, lighting, reflection, and cubemap. Used in Pixar's RenderMan.
- Learned ray sphere, plane intersection, and using vector operations.

Octree/QuadTree (C++, Sep 5 - 22, 2019)
- An accelerated spatial data structure, that enables fast lookup of 3d points and triangles.
- Drastically improved ray tracing time complexity between ray and triangle intersection.

Cloth Simulation (C++, Aug 2019 - Sep 2019)
- A simple OpenGL cloth simulation that reacts to gravity and wind forces by using Verlet Integration
- Implemented common physics objects such as springs and particles.

ELocation (C#, Mar 2019 - Apr 2019)
- An android app that gives the user real time information of 100+ public buses across the United States.
- Learned API requests and parsing the JSON object to represent the bus data. Also, Google's Map API.

SQL-Database (Java, May 2019 - Jun 2019)
- Built a SQL like database from scratch.
- Learned how to leverage Maps to handle parsing SQL commands and disk memory databases.

SVD-Image Compression (C++, Feb 2019 - Dec 2019)
- Implemented a concept form Numerical Analysis course to image compression.
- Learned about Matrix Decomposition, and getting Eigenvalues through Jacobi Iteration.