Arturo Cerna

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EDUCATION

University of California, San Diego **La Jolla, CA**
Bachelor of Science in Math-Computer Science *Graduation: June 2019*

- **GPA: 3.0**
- **Honors:** Provost Honors (Awarded for attaining above a 3.5 in a term)
- **Relevant Coursework:** Java Fundamentals, Data Structures, Computer Organization and Systems, Design and Analysis of Algorithms, Numerical Analysis I and II, Theory of Computation, Group Theory, Ring Theory, Graph Theory, Game Theory, Combinatorics, Geometric Computer Graphics I and II

PROJECTS

Geometric Computer Graphics I Final Project
- Created a scene containing a stadium inspired by Ayava stadium using OpenGL
- Used Bilinear interpolation to texture map certain images to make the stadium appear more lifelike
- Calculated the normals of surfaces in order to properly configure the lights in the scene and make sure they are realistic.

Personal Website
- Using CSS Bootstrap, created a simple webpage that contains basic information about me and my hobbies/projects.
- Utilizes Javascript (jQuery) in order to make simple interactive UI features.
- Hosted the website using Google Cloud Platform, and utilize its MySql features to pull information from a books database and display it on the website using PHP.

Data Structures Final Project (C++)
- Created a graph that holds a list of actors as vertices and all the movies they starred in as edges.
- Implemented Kruskal's algorithm in a program that takes two actors as input and shows the path from one actor to another.
- Using the same data structure, was then able to construct an invitation list to a fictional party where everyone has worked with a given amount of people by deleting the graph repeatedly until it was a k-core graph.

Creating Maze Puzzles
- Utilizing Java, created a program that takes an integer from the user and constructs a randomly generated maze
- Created a window that shows the image of the constructed maze to the user using JFrame.

Geometric Computer Graphics II Final Project (C++/OpenGL).
- Added advanced features such as anti-aliasing and soft shadows in a program that implemented a basic version of ray tracing
- Using jittered stochastic supersampling, was able to add special effects to my scene, such as motion blur and depth of field.
- Implemented mathematical concepts such as Bezier curves and B-Splines in order to create more complicated geometric shapes for my scenes.
- Created a four second video that uses 120 frames of ray traced images by exporting a bmp file for every frame calculated.

PREVIOUS WORK EXPERIENCE

San Lorenzo Garden Center **Santa Cruz, CA**
Cashier Feb 2017 - August 2017

- Responsible for attending customers professionally, while also responding to any questions they had
- Learned to delegate questions to other employees if I could not adequately answer customer's questions.
- Became adept at managing multiple responsibilities at once while prioritizing any customer concerns.
- Learned to communicate with other coworkers in order to solve any potential problems
- Handled over 80 customer transactions on a daily basis

ADDITIONAL INFORMATION

Technical Skills: (Proficient): Java, C/C++, HTML/CSS. (Familiar): OpenGL, MatLab, glsl, git, Unix/Linux, MySQL, PHP.