HENRY LUENGAS

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EDUCATION

California Polytechnic State University – San Luis Obispo — College of Engineering — Sep 2015 – Jun 2020
Bachelor of Science in Computer Science

SKILLS

Programming Languages C, C++, Python, Julia, Rust, Java, R, SAS
Systems and Frameworks Linux/Unix, OpenGL, OpenCL, Unity3D, KVM, Docker, SQL
Network Infrastructure Routing, Switching, Network Attached Storage, POE, Cabling

EXPERIENCE

IT Specialist – Cal Poly Student Affairs Technology – San Luis Obispo, CA — Apr 2016 – Jun 2020

- Diagnosed and resolved issues with the campus housing network and servers
- Provided technical support (software & hardware) for users of the campus network
- Maintained an internal website used to provide support to students in housing
- Trained new technicians in the use of network systems and user support protocols

PROJECTS

Ray Traced Photorealistic Video Renderer

- Developed a multithreaded and object-oriented C++ image render that utilizes a spatial data-structure
- The program parses and renders a subset of the POV-Ray scene description standard
- Features include a Cook-Torrance BDRF, reflection, refraction, shadowing, and Fresnel effects
- Planes, triangles, spheres, boxes, and multiple lights are all supported and can use matrix transformations
- The renderer applies rudimentary kinematics to produce successive frames for an output video

Tie-Dye Pixel Art Renderer

- Wrote a renderer in Python with the goal of investigating various methods of process acceleration
- Implemented JIT compilation using NumPy and Numba to show the drawbacks of the Python interpreter
- Implemented sequential and parallel running modes to investigate the performance of CPU parallelism
- Implemented a GPU compute mode with OpenCL to show how the process scales to hundreds of workers
- Implemented an R*Tree spatial data structure to display the speedup possible with an optimized algorithm

3D Marble Run Platformer Game

- Collaborated with a group to create a game from scratch in C++ and OpenGL
- Features include physics simulation, a spatial data structure, PBR shaders, shadow-mapping, environment mapping, view frustum culling, positional audio, enemy AI, and an adjustable third person camera

Music Visualizer

- Coded an interactive audio visualization program in C++ and OpenGL using audio captured from the system
- Programmed a procedural landscape with variable height based on Fast Fourier transform of the audio

AI Video Summarization Tool

- Worked with a group to create a utility to pare down security camera footage using AI image recognition
- Developed in Python using YOLOv3 for object detection and OpenCV for image manipulation

Networked Chat App and Packet Analyzer

- Wrote client and server programs in C that use TCP to convey custom message packets between users
- Created a utility in C that uses NPCAP to inspect packets, functioning like a basic version of Wireshark

System Building & Networking

- Built a virtualization server to use as a NAS, DNS resolver, Sophos UTM security gateway, and Docker host

ADDITIONAL INFORMATION

Work Eligibility: Eligible to work in the United States and Canada with no restrictions