Chengze(Ritz) Sun

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SKILLS

Languages: C/C++, C#, Java, Javascript, Python, HTML/CSS, LaTeX

Tools: Mac/Windows/Linux, Git/GitHub, VS Code, IntelliJ IDEA, NaviCat, MySQL, Postman

Frameworks/Libraries: Vulkan, OpenGL, React, Node.js, Vue.js, Spring Boot, pandas, NumPy, Matplotlib, Scipy

PROJECTS

Silic2 - doom like FPS game | *C++, OpenGL, ImGui*
- Developed a Doom-inspired FPS demo with visuals similar to Eclipsium (pixel-art style, low-resolution render targets, and nearest-neighbor filtering).
- Implemented core gameplay mechanics including fast-paced shooting, multiple weapons, and a dynamic movement system (sliding, jumping, sprinting).
- Designed a GPU-driven particle system for muzzle flashes, explosions, and smoke effects to enhance retro-style combat feedback.
- Built a custom map editor with Dear ImGui, supporting real-time level editing, texture/brush tools, and instant in-game testing.

Simple Vulkan Engine | *C++, Vulkan, Cmake, SPIR-V*
- Developed a lightweight Vulkan-based 3D renderer that is able to load multiple models.
- Implemented core Vulkan features, including instance creation, logical devices, and swap chain management. Also designed an efficient rendering pipeline with shader stages, descriptor sets, and command buffers for optimal performance.
- Added support of Simple Monte Carlo Ray Tracing and Phong shading for lighting.
- Supported dynamic uniform buffers for 3D transformations and implemented basic lighting models.

Luminosity of Astronomical research in UC Berkeley | *Python, pandas, NumPy, Matplotlib, Scipy*
- A collaborative research project investigating the correlation between a star's luminosity and various factors, including its rotation period, mass, and gravitational interactions with other celestial bodies
- Employed Python to visually illustrate the dynamic changes in a star's luminosity over time
- Demonstrated proficiency in data collection, manipulation, utilization, organization, and analysis as integral skills for the project
- The project highlights the team's expertise in data science and research methodologies, sufficiently demonstrating the ability to analyze and visualize data

WORK EXPERIENCE

Graphic Software Engineer [CoreAVI (Lynx)] | *Co-op* — May 2025 - Aug 2025

- As a co-op graphics software engineer at CoreAVI, I worked on Vulkan CTS (Conformance Test Suite) debugging, where I contributed to resolving multiple hanging and failing test cases, improving overall driver stability and compliance. This experience strengthened my expertise in low-level graphics debugging.
- Additionally, I helped develop a graphics compositor application that showcased simultaneous rendering of Vulkan, OpenGL SC, and OpenGL windows, serving as a reference for multi-API interoperability. This demo later became a go-to example our manager presents to students during interviews.

GPU driver Engineer [Huawei Technologies Co., Ltd. in Canada] | *Co-op* — Sept 2024 - Dec 2024

- As a co-op GPU driver engineer at Huawei, I contributed to the development and optimization of GPU performance and rendering for advanced computing solutions. I collaborated with senior engineers to analyze new render technologies such as Nvidia DGC and D3D12 work graph.
- Furthermore, I worked with senior engineers to design and implement shaders, improve rendering performance, and troubleshoot graphical issues. This experience allowed me to develop a strong understanding of low-level graphics APIs such as OpenGL and Vulkan.

EDUCATION

University of Waterloo — Waterloo, Ontario
Candidate for BASc. in Computer Engineering; **GPA: 88.09/100 (2 Term Dean's List)** — *Sept 2023 – May 2028*

University of California, Berkeley — California, United States
Study in Computer Science and Astronomy; **GPA: 3.71/4.00** — *Jun 2022 – Aug 2022*