Yumeng He

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EDUCATION

University of Southern California Aug 2024 – May 2026 (Expected)
Master of Science in Computer Science *Los Angeles, CA, USA*
- Relevant Courses: Computer Graphics

University of Toronto Sep 2019 – May 2024
Honours Bachelor of Science degree with High Distinction *Toronto, ON, Canada*
- Computer Science and Mathematics double major
- Dean's List Scholar for 4 semesters
- Cumulative GPA: 3.71/4.0, highest Sessional Average: 92.40%.
- Relevant Courses: Linear Algebra I, Linear Algebra II, Intro Machine Learning, Intro Artif Intell

WORKING EXPERIENCE

Software Developer Intern | full-time August 2022 – August 2023
HCL Canada Inc. *Toronto, ON, Canada*
- Utilized Jenkins to automate build and deployment processes and updated existing company code to address technical debt, significantly accelerating production releases and reducing human error.
- Built Docker images on both xLinux and pLinux platforms, ensuring consistent and scalable deployments.
- Integrated SonarQube into the development pipeline, documented a step-by-step usage guide, presented findings to cross-functional teams, and resolved 3 critical bugs plus 308 code smells (4 blockers, 41 major, 266 info).
- Developed a shell script to automatically clean up old logs every Sunday at 00:00 EST, preventing clutter and improving system performance.

RELEVANT PROJECTS

Ray Tracing | C++ Fall 2024
- Developed a robust ray tracer in C++ capable of rendering both triangles and spheres using Phong shading, shadow rays, and recursive reflections for mirror-like surfaces.
- Implemented supersampling antialiasing, soft shadows from area lights, and the Möller–Trumbore algorithm for efficient ray–triangle intersections, enhancing visual realism and performance.

Simulating a Roller Coaster | OpenGL Fall 2024
- Implemented a first-person roller coaster simulator in C++ and OpenGL, harnessing Catmull-Rom splines for realistic track geometry and smooth camera orientation.
- Created multi-shader pipelines (texture mapping for ground, Phong shading for rails) with per-pixel lighting to achieve immersive, real-time visual effects.
- Added user-controlled speed, automated screenshot capture, and custom rail cross-sections for a fully interactive 3D experience.

Height Fields Using Shaders | OpenGL Fall 2024
- Built an interactive OpenGL pipeline with vertex and fragment shaders to generate real-time 3D terrain from heightmaps, supporting multiple rendering modes (points, lines, wireframe, smoothed surfaces).
- Integrated dynamic coloring, transformation/zoom controls, and automated screenshots/rotation features for an immersive, high-performance visualization experience.

Petpal | Full-Stack Fall 2023
- Led a four-person team to build a Python-based adoption platform with Django REST Framework, integrating MySQL for real-time data handling and advanced search filters.
- Implemented a responsive front end (HTML, CSS, JavaScript) and secure authentication to streamline the pet adoption process for seekers and shelters.

TECHNICAL SKILLS

Languages/Tools: Proficient in C++ and Python (with Jupyter), plus JavaScript (HTML/CSS), MySQL, Docker
Graphics Experience: Developed real-time rendering pipelines (OpenGL, shaders) for interactive 3D projects
Additional: Node.js, React, Gradle, Ant, R, Shell scripting
Communication: Fluent in English and Mandarin