Ryan Gattis

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Technical skills

- **Languages:** C, C++, C#, CMake, GLSL, HLSL, Python, Java, Bash/Shell, PowerShell, TypeScript, JavaScript, HTML, CSS
- **Frameworks:** Unity, OpenGL, OpenCL, JsonCpp, SDL, GLM, Eigen3, libpng, OpenMesh, Three.js, OpenMP, GoogleTest, Node.js, Webpack, WebGL, WebSockets, ZeroMQ, libigl, Vulkan, Open MPI, WinRT, MRTK, OpenXR
- **Software:** Git, Bitbucket, Jenkins, GitHub, Vim, Microsoft Office Suite, Jira, Visual Studio, Visual Studio Code, Xcode, Eclipse IDE, GStreamer, vcpkg, LaTeX, ChatGPT, Microsoft Copilot, npm
- **Environments:** Windows, Mac, Linux, Ubuntu, Fedora, Arch Linux, WSL, Cygwin, Git Bash, VirtualBox, QEMU/KVM, Virtual Machine Manager
- **Methodologies:** Agile Software Development, Scrum, Scrumban, Kanban, Object-Oriented Programming (OOP), Cross-Platform Development, MVVM, MVC

Work experience

Microsoft *contract through TEKSystems* *July 2024 - April 2025, 10 mos*
XR Software Design Engineer II *Redmond, Washington*

- Contributed to Unity-based test tools using OpenXR and MRTK to assess HoloLens 2 and IVAS (Integrated Visual Augementation System) performance.
- Extended C++ head tracking API to expose internal metrics and system behavior at the application level.
- Collaborated with the head tracking team to identify, debug, and resolve real-time tracking inconsistencies.
- Worked on runtime anchor loading and rendering systems, verifying spatial consistency between actual and expected anchor positions.
- Diagnosed and resolved Bluetooth connectivity and latency issues to ensure hardware compliance with system specifications.
- Instrumented tools for recording and visualizing Bluetooth latency and dead reckoning performance.
- Authored and updated internal documentation to improve onboarding and knowledge transfer for future developers.

E4D Technologies, LLC *November 2015 - May 2024, 8 yrs 7 mos*
3D Software Engineer, Tech Lead, Scrum Master *Richardson, Texas*

- Specialized as a 3D software engineer in the CAM/CAD domain, developing software that supported restorative dentistry. Our application facilitated the acquisition and processing of 3D intraoral data to design and manufacture dental restorations.
- Solo developed a TypeScript web demo with webpack, integrating 3D models and scene graph construction in real-time via WebSockets and ZeroMQ into a Three.js scene, demonstrating advanced data handling and dynamic scene rendering for a new product architecture.
- Significant contributor to two major software redevelopment initiatives, executing the design and implementing the foundational work necessary to swiftly progress the projects from concept to operational status.
- Applied OpenCL to optimize CAD/CAM operations, enhancing offset surface calculations for efficient tool path generation and enabling real-time cutback surface updates in the Abutment Implant module.
- Led the development of file loading and model rendering, incorporating PLY, STL, and OBJ formats, establishing a robust foundation for 3D data manipulation.

- Innovated a slice plane feature using the HLSL shading language, enabling intricate cross-sectional views of 3D models.
- Implemented sophisticated camera controls using 3D mathematics to enhance precision in scene navigation and interaction, crucial for detailed model design.
- Developed controls for moving and manipulating 3D objects in the scene, enabling precise adjustments.
- Employed linear algebra concepts to introduce mill block positioning and rendering, enabling users to visualize space constraints within the block, thus enhancing decision-making and design accuracy.
- Contributed to the adoption and understanding of the MVVM design principles within the team, enhancing the project's architectural robustness by sharing insights and guiding colleagues.
- Oversaw sprint planning, retrospectives, and code reviews to drive team cohesion, uphold quality standards, and deliver on project objectives.
- Collaborated in design reviews, contributing insights and working with cross-functional teams to refine software designs.

Personal projects

- **Custom-made Shader Loader and Viewer,** GitHub: matthewgattis/shader-viewer-4
  Developing a C++ application using OpenGL and SDL2 for real-time raymarching and ray tracing, showcasing my graphics programming expertise through sophisticated shader operations and dynamic camera controls for complex 3D visualizations.
- **OpenCL-Based Path Tracer,** GitHub: matthewgattis/cl-renderer
  Actively developing a sophisticated C++ application leveraging OpenCL, my work emphasizes advanced graphics programming with Monte Carlo path tracing and ray marching algorithms to produce photorealistic 3D fractal visuals using physically based rendering techniques.

Education

Bachelor of Science, Computer Science
Minor, Electrical Engineering *Texas Tech University*
Bachelor's degree program *Fall 2010 - Spring 2015*
Capstone project: Qt Framework based OpenGL/GLSL shader IDE