J Wylie Cullick

Simulation and GPU Engineer — Rust, Vulkan & WebGPU

Norman, Oklahoma · 970-763-8790 · kulik@terebinth.is · terebinth.is · LinkedIn · GitHub

Summary

Simulation and GPU engineer with 14 years in software. Builds simulation from the domain science in discrete form (Lagrange, Euler, Maxwell; fields and entities; the definition of a universe and its laws) through to rendering: Vulkan on the desktop, and WebGPU, WebAssembly and Rust in the browser. Now developing parallel discrete-event simulation (PDES): a browser-based version with WebRTC between nodes enters test in December 2026, and a desktop cluster version is planned. Carries the whole stack around a simulation, from rendering and real-time networking to AWS infrastructure. Sole engineer at Medngine / Regenative Labs for three years.

Skills

- **Simulation:** single-threaded physical simulation (discrete forms from Lagrange, Euler and Maxwell; fields and entities), scenario building; parallel discrete-event simulation in development
- **Desktop GPU programming:** Vulkan (Winit, SPIR-V, GLSL), working against the C and C++ Vulkan API
- **Browser-based simulation applications:** WebGPU, WebAssembly, Rust; also WebGL2 and GLSL
- **Systems:** Rust, WebAssembly, multithreading, C, C++
- **Real-time networking:** WebRTC, WebSockets, Axum, hyper, Actix
- **Mathematics:** linear algebra, multivariable calculus, probability and statistics
- **ML and data:** TensorFlow, CUDA, Pandas, NumPy, Python
- **Cloud:** AWS, Docker, Kubernetes, Linux

Experience

Sole Engineer — Medngine / Regenative Labs *Oct 2022 – Present · Remote*

- **Haggister:** clean-sheet sales platform in Rust (Leptos, Axum, WebAssembly), extended with clinical tools: simulation, studies and scenario builds. Designed and written alone. The simulation code is on course to equal, then outgrow, the storefront code.
- **Simulation:** WebGPU simulation built. Parallel discrete-event simulator in development since autumn 2026, in Rust, Leptos, WebAssembly and WebGPU. Goal: several clinicians in one scenario, each on their own laptop. First tests due December 2026.
- **Networking:** WebRTC and WebSocket comms built. WebRTC is the planned transport between simulation nodes, for low-latency parallel simulation.
- **Scenario building:** scenario-building work alongside the simulation engine.
- **Delivery:** deployed blue-green on AWS infrastructure I built and solely own. Production cutover scheduled Dec 4, 2026.
- **Context:** sole engineer Sept 2023 – Oct 2026 across infrastructure, backend, frontend and devops. Also re-engineered the production order platform (about $2.4M a year in commission volume) and wrote its Rust async service.
- **Architecture:** engines, universes and renderers kept as separate components, each developed as a numbered series (`engine__000`, `engine__001`; `universe__000`; `renderer__003` and so on).

Simulation Engineer — Terebinth *Jan 2017 – Present · Independent*

- Private simulation engine in Rust, single-threaded so far. The universe and its laws defined from the domain science in discrete form: Lagrange, Euler, Maxwell; fields and entities.
- Targets: flight simulation and game-style simulation.
- Desktop GPU programming on Vulkan: Winit, SPIR-V, GLSL. Native point-cloud renderer.
- Parallel version (PDES across a home cluster) planned.
- Bridges with Haggister: Vulkan natively on the desktop; WebGPU, WebAssembly and Rust in the browser.

Earlier simulation, graphics and hardware work

- **Freelance contracts**, Jul–Oct 2022. glTF viewer in Rust, WebAssembly, WebGL2 and GLSL, with the linear algebra and trigonometry behind it. Networked game in Rust, WebAssembly, WebGL2, Actix and WebSockets.
- **Edvo** — Software Engineer, Dec 2021 – Feb 2022. Multithreading and optimization in Rust (wasm-bindgen, web-sys) for a collaborative SVG graphics editor.
- **Solera, Inc. (R3PI R&D)** — Senior Software Engineer, Feb–Aug 2019. Sole owner of engine diagnostics from in-vehicle audio: TensorFlow on dedicated CUDA GPUs, Pandas, Python. Sole owner of personnel tracking over Raspberry Pi arrays, Bluetooth and WebSockets.
- **SiriusXM, Connected Vehicle** (via Relus Technologies) — Software Engineer, Jul–Dec 2018. REST APIs in Node.js and Redis for a large-scale, safety-critical vehicle network. Project validation by network simulation.
- **Vida Systems** — Associate Software Engineer, Jan–Jun 2015. Interactive 3D simulation of human anatomy for medical students: WebGL and GLSL rendering, React controls.
- **Other roles, 2012–2021:** Aetna, The Container Store, Vinder, Virtual Fantasy League, ChameleonX, Woobi, Sergata, GlowLit, Bartr, Kef International. Full-stack, backend and devops.

Education

- UMass Boston, 2007–2009: mathematics BSc program, most coursework completed, no degree. Multivariable calculus, linear algebra, complex analysis, probability and statistics, abstract algebra, topological manifolds.
- George Mason University, 2003–2004.
- Santa Monica College, 1999–2000.