a9lim

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Profile

I'm a Singaporean developer building simulations, tools, and more at a9l.im. Everything I make is vanilla JS that I write with Claude. I'm interested in freelance and collaboration, especially in DIY projects like research tools.

Experience

Independent Developer — a9l.im Feb 2026 – Present

- Built and maintain a portfolio of open-source interactive simulations and tools (see Selected Projects below) plus the shared design system and component library used across all of them. Implemented in rawdogged vanilla JavaScript.
- Architected the SSR layer on Cloudflare Workers + Assets: per-route HTMLRewriter injection, edge-rendered markdown, structured data, and per-route security headers.
- Maintains the entire stack solo with Claude.

SDDM Theme Maintainer — Catppuccin 2025 – Present

- Led rewrite and modernization of Catppuccin's SDDM display manager theme in QtQuick.
- Implemented dynamic accent color and per-user icon integration.
- Automated theme generation across the four Catppuccin flavors to streamline maintenance.
- Designed vector backgrounds and user iconography.

Selected Projects

Saklas PyPI · Python

- Activation steering and trait monitoring for HuggingFace transformers — extracts contrastive steering vectors and adds them to hidden states at generation time, no fine-tuning required.
- Three interfaces: a terminal UI with live alpha knobs and probe sparklines, an HTTP server speaking both OpenAI `/v1/*` and Ollama `/api/*` wire formats on the same port, and a Python API for scripted experiments.
- Ships 21 pre-built probes scoring affect, epistemic stance, register, and alignment in-flight; tested on Qwen, Gemma, Ministral, gpt-oss, Llama, and GLM.
- Implements the contrastive-PCA reading procedure from Zou et al. (2023); published to PyPI under AGPL-3.0 with CI, type checking, and llama.cpp GGUF interchange.

Geon — Relativistic Particle Physics JavaScript · WebGPU

- Real-time N-body simulator running on WebGPU compute shaders, modeling 11 force types — Newtonian gravity, gravitomagnetism, Coulomb, Lorentz, Yukawa, Higgs and axion field couplings, Hubble expansion, 1PN general-relativistic corrections, spin-orbit, and radiation reaction.
- Barnes-Hut tree acceleration for $O(N \log N)$ scaling; Boris integrator preserving phase-space volume.
- Black-hole mode with Kerr-Newman event horizons, Hawking radiation, Schwinger pair-production discharge, and superradiant axion clouds. Nineteen curated presets demonstrate Keplerian orbits, Rutherford scattering, Higgs wells, gravitational-wave inspiral, and more.

Cyano — Cellular Metabolism JavaScript

- Interactive biochemistry simulator covering twelve metabolic pathways — glycolysis, gluconeogenesis, PPP, Krebs, beta-oxidation, fatty acid synthesis, the Calvin cycle, the light reactions, fermentation, the urea cycle, and amino acid catabolism — connected through shared metabolite pools.
- 14-complex electron transport chain with proton motive force, oxidative phosphorylation, uncoupling, leak, and reactive oxygen species generation; allosteric regulation gates every reaction (PFK, PDH, ICDH).
- Six organism presets including a cancer-cell preset that demonstrates the Warburg effect.

Shoals — Options Trading JavaScript

- Derivatives pricing simulator combining Heston stochastic volatility and Merton jump diffusion with a Vasicek mean-reverting interest rate. American options priced via 128-step Cox-Ross-Rubinstein binomial tree with term-structure volatility, moneyness skew, and discrete dividends.
- 25-strike options chain with real-time Greeks, multi-leg strategy builder (spreads, straddles, condors, butterflies), payoff diagrams, and portfolio-level margin tracking.
- Narrative event engine with 400+ curated scenarios — earnings, monetary policy, geopolitics, sector rotation, technical signals, black swans — chained via a Poisson scheduler with trait-aware likelihood weighting.

Gerry — Redistricting & Electoral Fairness JavaScript

- Interactive gerrymandering simulator on a procedural hex-tile electorate. Players paint districts and evaluate them against six fairness metrics: efficiency gap, partisan symmetry, competitive-district count, Polsby-Popper compactness, contiguity, and majority-minority districts.
- Automated modes include pack-and-crack and a simulated-annealing fair-draw optimizer; Monte Carlo election

stress tests run thousands of simulated elections with turnout noise to evaluate map robustness.
- Procedural maps generated via seeded Perlin noise with configurable urban clustering and minority density, reproducible by URL hash.

Scripture — Sacred Text Reader JavaScript
- Browser-based reader for sixteen sacred texts spanning Christian, Islamic, LDS, Confucian, Taoist, Shinto, Zoroastrian, Buddhist, Finnish, and Norse traditions — ∼50 MB of static JSON, loaded on demand per chapter.
- Full-text search across all sixteen works, TF-IDF concordance for related passage discovery, verse-linked notes, text-to-speech, and deep linking to any verse via URL.
- Edge-SSR'd verse content with per-chapter `Chapter` JSON-LD and per-verse `Quotation` structured data so the corpus is crawlable without JavaScript execution.

Education

University of California, San Diego March 2026
B.S. in Mathematics · GPA 3.75 · GRE 335 (170Q, 165V)

Singapore American School Class of 2023
Summa Cum Laude · GPA 4.50

Skills

Building with agentic AI	Daily driver: Claude Code. Comfortable directing, reviewing, and integrating large volumes of AI-generated code at production scale.
Languages	JavaScript (vanilla, ES modules, Canvas, WebGL, GLSL), Python (NumPy, Matplotlib, ML tooling), Java, QtQuick / QML, LaTeX, HTML, CSS.
Web & infrastructure	Cloudflare Workers, Workers Assets, Analytics Engine, edge SSR via HTMLRewriter, structured data (JSON-LD, schema.org, OpenGraph), self-hosted typography, no-build pipelines.
Other	Technical writing, vector graphics, soldering, Spanish (novice), conlang construction.

Open to

Anyone who wants to work with me on something, reach out at mx@a9l.im or @a9lim on Discord.