

SHIHAB SHAHRIAR ANTOR

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SUMMARY

Founder of [Shahriar Labs](#), an independent AI and software lab in Bangladesh. I take products from an idea to production end to end: product design, distributed systems, AI agents, cloud infrastructure, payments, security, and the distribution engine that brings people in. My flagship, [letX](#), is a real-time collaborative LaTeX editor used by **4,800+ people at 384 universities and research labs in 66 countries**, grown with **zero paid advertising**. I work AI-native, with coding agents as a force multiplier, and publish the tooling I build for that as open source. Member of **NVIDIA Inception**; startup credits from the **Google for Startups Cloud Program** and **AWS Activate**.

EXPERIENCE

Shahriar Labs | Founder and Lead Engineer

Jan 2025 – Present | Dhaka, Bangladesh

letX | Real-time collaborative LaTeX editor, the Overleaf alternative

[letx.app](#) | [live stats](#)

- Founded letX and wrote about **98% of its 1,257 commits**, across product, backend, frontend, infrastructure and operations. Launched **27 Jan 2026**; as of Sep 2026: **4,800+ registered users, 384 universities and labs, 66 countries** (counted from verified institutional email domains, not self-reported fields).
- **Real-time collaboration**: Yjs CRDT editing over Go (Gin) WebSockets, with Redis pub/sub fan-out across API instances. Document text and project state (PDF, presence) run in two separate CRDT rooms so neither can corrupt the other. Unlimited collaborators on every plan.
- **Compile farm**: SQS-queued workers on AWS Fargate running `latexmk` on full TeX Live (5,000+ packages), per-project pdfLaTeX / XeLaTeX / LuaLaTeX, SyncTeX. A typical compile takes **about 6 s end to end** (2 s median queue plus 3.7 s median compile, over 12,700 compiles in 30 days).
- **Lexi, the in-editor AI agent** ([letx.app/lexi](#)): reads the real compile log, edits the source in place and rebuilds, instead of guessing from pasted errors. 19 commands (`/fix`, `/table`, `/diagram`, `/image-to-tex`, `/pdf-to-tex`, `/slides`, ...), on Gemini via Vertex AI, metered per run against a monthly dollar cap on each plan.
- **First-party hosted MCP server** ([letx.app/mcp](#) | [listed on Glama](#)): self-hosted OAuth 2.1 and 13 tools, so Claude, ChatGPT and Claude Code can search templates, edit projects and compile PDFs inside a user's account.
- **1,000+ compile-tested templates** across 20 categories (87 university theses, 178 CVs, IEEE, Springer, Nature, NeurIPS, NASA and NSF formats), produced by a template factory with a compile gate and a duplicate gate, and open-sourced on [GitHub](#).
- **Business layer**: paid and academic plans with LemonSqueezy billing, an entitlement service as the single source of truth, academic-status verification with a vision model, two-way GitHub sync (rolling out), and a French interface. Features ship behind per-feature audiences (staff, then everyone) instead of a staging environment.
- **Platform and security**: Go, pgx, sqlc, PostgreSQL 15 and Redis 7 on ECS Fargate (ap-south-1), React 18 + CodeMirror 6 on Cloudflare Pages, Terraform, keyless GitHub Actions deploys through OIDC. Ran full-stack security reviews and shipped the fixes: remote-code-execution and server-file-read paths closed, compile workers hardened (process-group kill on deadline, argument-injection guard, restricted TeX file access).

letX Growth Engine and Internal Tools | Distribution and operations, built as software

- **Typefoundry, an automated film studio**: 113 short films and 171 platform cuts generated reproducibly from source (cue sheets, Remotion compositions, a LuaLaTeX drawing engine, procedural music, synthesised voice-over) with an automated quality-check harness. Also designed **Preamble**, a 32-lesson short-form LaTeX course for YouTube.
- **Outreach engine**: a SQLite graph of institutions, researchers and papers for email outreach to research labs: templates, a linter that blocks any unverified number, and replies threaded in one conversation. A person sends every email.
- **Search and AI-answer-engine optimisation**: prerendered pages, structured data, `11ms.txt`, [51 answer-first LaTeX guides](#), sourced comparison pages and [free browser tools](#), so letX is found and cited by search engines and AI assistants.
- **Running the company from an AI assistant**: a private operations MCP connector (22 tools: analytics, billing, compile queue, email, academic reviews, account recovery), an admin console, a production release test that runs end-to-end suites on throwaway accounts, and a script that re-verifies every public number from production data.

QuantumSketch | Prompt-to-video engine for STEM explainers

[quantumsketch.app](#) | [blog](#)

- Turns one prompt into a narrated ManimGL animation. A Go API hands each job to Python workers for AI reasoning and rendering through **Temporal** durable workflows.

- Crash-resilient rendering: Temporal retries failed steps and resumes a workflow after a worker dies, so multi-minute renders finish without manual recovery.
- A planning pass with validated scene specs catches hallucinated visuals before any frame is drawn; works across OpenAI, Anthropic and Google models. Terraform (AWS) and Docker infrastructure.

Context Heavy | Persistent memory for AI agents (*private repository*)

[CH-Bench](#) ([public](#))

- Multi-tenant knowledge-graph API that stores what agents learn about people, codebases and systems and serves it back through hybrid retrieval: graph traversal (recursive CTEs) plus pgvector semantic search. Go 1.25 + Gin, PostgreSQL 16, Redis 7, workspace-scoped API keys and JWT, React dashboard with a graph viewer.
- Terraform modules for networking, ECR, RDS, ElastiCache, ECS Fargate and secrets; CI/CD through GitHub Actions OIDC with no long-lived AWS keys.
- Built **CH-Bench** to measure it honestly: a zero-dependency Python harness scoring a memory system on recall@k, MRR and nDCG plus an LLM judge for correctness, groundedness and abstention. Runs LongMemEval, LoCoMo and a custom suite of long-horizon recall questions; any system plugs in through a four-method adapter.

offSchool | Simulation-first learning for Bangladeshi students (*in development*)

- Students meet a real problem, predict, experiment in a simulation, and only then learn the concept. Scoped to SSC Physics, Chemistry, Biology, Higher Math and ICT: **60 chapters, 656 topics**, in Bangla and English.
- Monorepo: Next.js web (S3 + CloudFront), Expo app for Android, iPhone and iPad, a pure-TypeScript simulation engine with a declarative SimSpec runtime, JSON-Schema-validated curriculum, and a Go API with a River background worker.

ComiKola | AI comic and webtoon creation platform

- A studio for series creators: world-building, a character studio that generates reference portraits to keep characters consistent, an AI scriptwriter (Gemini) that turns a synopsis into a panel-by-panel script, and an editable storyboard. Go and Python services, Next.js and React frontends, PostgreSQL, Docker. Prototyped a Flutter spin-off for bedtime comics.

BikroyBuddy | AI assistant for social-commerce sellers (*2025, retired*)

- Platform for Bangladeshi sellers who trade on Facebook, Instagram and WhatsApp: a Go API (Gin, GORM, PostgreSQL, Redis, JWT) modelling products, orders, customers, social-channel webhooks and an audit log of AI replies, and a Next.js seller dashboard for orders and inventory.

Bagh | A Bangla-first programming language and cloud IDE

[bagh-online](#)

- **Bagh Lang**: a bilingual (Bangla + phonetic Latin) language for children that translates to Python at runtime, with Bangla numerals, Bangla standard-library aliases, syntax checking, a REPL, a packaged CLI and a kid-friendly desktop IDE.
- **Bagh Online**: a Bangla-first learning platform (React, Vite, FastAPI) with story-driven lessons, auto-tested coding challenges, a sandbox (process isolation, timeouts, import allow-listing) and a Gemini copilot that answers in Bangla.

OPEN SOURCE

- [freelm](#) (PyPI | [docs](#)): a free, always-up LLM client and gateway for Python and TypeScript. One OpenAI-compatible API over six free tiers (OpenRouter, Gemini, NVIDIA NIM, Groq, Cerebras, Mistral) with automatic failover, key rotation and streaming.
- **Agent skills for Claude Code and other coding agents**: [latex-engineer](#), [manim-coding-skill](#), [Godot-Skill](#), [seo-master](#), [skill-builder](#), [common-knowledge](#), [clean-my-mac](#), [openrouter-free-infer](#), [claude-antigravity-orchestrator](#) (one agent orchestrates, another does the legwork on a separate quota).
- [wireguard-anywhere](#): your own WireGuard VPN on AWS, GCP or Azure with one command, multi-region and self-hosted.
- [softco](#): an agent skill that runs a coding agent through a full software lifecycle (discovery, design, docs, code, test, infrastructure, deploy) with tests written first, an 80% coverage gate and an AGENT.md hand-off contract. Works in Claude Code, Codex, Cursor and opencode.
- [latex-templates](#) and eight standalone journal and proposal templates (REVTeX, AASTeX, MNRAS, AIAA, NASA ROSES, telescope proposals, Beamer, resume).
- [claude-code-promo-video](#): a 30-second product film made by prompting: animation from Claude, voice-over from a local TTS model, music and sound effects synthesised in NumPy. No paid APIs, every prompt included.

SELECTED PROJECTS

- **SimAWS** (*private*): learn AWS by running it. A deterministic simulation of the AWS control plane under a faithful console clone (Cloudscape), with tasks that validate the account you actually built. Runs fully in the browser: no

- AWS account, no cost.
- **ChessLens**: chess review studio that turns Stockfish output into plain-English coaching through an LLM (OpenRouter). Go (Gin) API with a Stockfish manager, React front end, Redis queue locally and SQS in production, Terraform for AWS Fargate and Aurora.
 - **World Cup 2026 streaming**: browse and watch free-to-air channels from broadcasters worldwide. Next.js, Cloudflare Workers, Neon Postgres.
 - **GrowthMonitor**: multi-tenant CRM and analytics for SMEs with a natural-language analyst. React, Express (JWT, Prisma), and a Python AI worker (FastAPI, LangGraph, Gemini, Redis); role-based access and CSV import.
 - **TapNOrder**: QR-code table ordering for restaurants. FastAPI backend with an order-status lifecycle that messages the guest on WhatsApp (Cloud API) at every change, and a Next.js staff dashboard. Docker.
 - **TryOn**: virtual try-on from a user photo and a product image with Gemini 2.5 Flash Image. Next.js 14, FastAPI, SQLite, Pydantic-typed API.
 - **CompileX**: browser IDE with a file tree, editor and live terminal streamed over Socket.IO from node-pty. React, Node.js.
 - **EasyEdu**: university management system with advising, course materials, quizzes, grades, course evaluations, semester-fee payment through Stripe, and CSV bulk import. Django.
 - **Convenience Purse**: Flutter storefront for digital art with catalogue, categories, item details, cart and profiles (GetX). University course project.

RESEARCH

Synergistic Application of Machine Learning and Computer Vision for the Detection of Exoplanets and Stars

BRAC University

- Contrastive learning (SimCLR, Siamese networks) on direct-imaging telescope data: **92% precision and 89% recall** on the test set for exoplanet detection. Preprocessing and feature engineering to separate faint signal from instrument noise.

SKILLS

Languages	Go, Python, TypeScript / JavaScript, SQL, Dart, C, C++, C#, LaTeX
Backend	Gin, FastAPI, Django, Node / Express, REST, GraphQL, WebSockets, Temporal, River
Frontend	React, Next.js, Vite, CodeMirror 6, Yjs (CRDT), Three.js / React Three Fiber, Tailwind, Expo, Flutter
AI	LLM agents and tool use, MCP servers and OAuth 2.1, RAG and hybrid retrieval, pgvector, LangGraph, LangChain, evaluation harnesses, Vertex AI, OpenRouter, contrastive learning (SimCLR)
Data	PostgreSQL (pgx, sqlc, pgvector), Redis, SQLite, MySQL
Cloud and ops	AWS (ECS Fargate, EC2, S3, RDS, ElastiCache, SQS, SSM, IAM), GCP, Azure, Cloudflare (Pages, Workers), Terraform, Docker, GitHub Actions (OIDC), CloudWatch
Growth	SEO and AI-answer-engine optimisation, structured data, programmatic content, email outreach, analytics (Search Console, Bing Webmaster)
Creative	Programmatic video (Remotion, ManimGL), CapCut, Photoshop, Illustrator, Canva, AI video tools (Veo, Kling, Runway, Higgsfield)

EDUCATION

BRAC University, Dhaka | Computer Science
Coursework: Artificial Intelligence, Machine Learning, Data Science, Algorithms and Data Structures, Database Systems, System Design, Operating Systems, Compiler Design.

LEADERSHIP

- **Creative Director, Atharo**: led a community sustainability campaign of about 300 participants, owning the visual identity and campaign strategy.
- **Executive, BRACU Entrepreneurship Forum**: ran strategy and startup-case workshops and mentored junior teams.

LANGUAGES

Bengali (native) | English (fluent) | Hindi (conversational)