

Eassa Ayoub

AI Workflow Infrastructure | Mortgage Systems Builder | Rust & TypeScript
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SUMMARY

Former mortgage broker, bookkeeping/operations strategist, retail field-tech, and SMB operator turned software systems builder. I build Rust and TypeScript infrastructure for AI-native workflows that need declared state, provenance, deterministic replay, release gates, and human-in-the-loop controls. Current work centers on BatPAK and LiteShip/CZAP: public package/crate families for audit-grade event history, adaptive workflow surfaces, deterministic replay, release-gated systems, and operator-readable evidence. Best fit: mortgage/fintech AI, document workflows, compliance traceability, and infrastructure where "what did the system know, when, and why?" must be answerable.

CORE STACK & SYSTEMS

Primary stack: Rust, TypeScript, Effect, Astro, React, Vite, Vitest, Playwright, Node.js, pnpm, Cargo

Systems focus: Event sourcing, append-only journals, hash chains, receipts, canonical encoding, TypeScript SDK/codegen, wire protocols, deterministic replay, projections, package publishing

Verification: Release gates, CI, coverage, property tests, fault/crash testing, mutation testing, semver/public API checks, package smoke, audit reports

Operator bridge: Mortgage origination, borrower intake, doc collection, POS/CRM workflows, Webflow/SuiteDash, bookkeeping ops, WISP/PII handling, network hardware support

SELECTED TECHNICAL WORK

BatPAK | *Rust crate family + TypeScript SDK* | crates.io / npm | [GitHub](https://github.com)

- Built and published an embedded, sync-first append-only journal for tamper-evident event history: typed payloads, Blake3 hash-chained ancestry, HLC frontier, verifiable receipts, deterministic replay, and derived projections.
- Shipped family surfaces around the core: syncbat runtime dispatch, netbat NETBAT/1 terminal protocol, hostbat host contracts, and @batpak/sdk for TypeScript consumers.
- Aligned publishable Rust crates and @batpak/* npm packages; added one-install TypeScript SDK, generated Effect schemas/types, Rust/TS canonical byte parity, and ten reference wire operations including evidence.* reports.
- Built release and evidence discipline: traceable invariants, conformance docs, public API snapshots, semver/check-version-pins, property tests, loom concurrency proofs, crash/fault injection, mutation lanes, package smoke, docs, benchmarks, and changelog sealing.

LiteShip / CZAP | *TypeScript, Astro, Effect, React, Vitest, Playwright* | npm | [GitHub](https://github.com)

- Built a TypeScript-first adaptive projection framework for web/workflow surfaces: continuous signals such as viewport, motion, latency, device/GPU tier, and user preference become named states cast to CSS, GLSL, WGSL, ARIA, AI-readable manifests, and runtime outputs.
- Maintained multi-package @czap/* workspace across core, quantizer, compiler, web runtime, detect, Vite, Astro, edge, worker, stage, Cloudflare, Remotion, scene, assets, audit, CLI, create-liteship, and MCP server surfaces.
- Hardened the release gauntlet across build, typecheck, lint, docs, invariant checks, unit/component/property/integration/browser tests, E2E/stress/red-team lanes, benchmarks, package smoke, coverage merge, runtime seam reports, audits, telemetry, and feedback verification.
- Useful in AI mortgage/document flows because the UI and automation layer can expose explicit boundaries, trustworthy states, safe rendering defaults, and adaptive borrower/operator experiences instead of opaque automation.

PROFESSIONAL EXPERIENCE

The Free Battery Factory | **Founder & Systems Builder** | *Jan 2024 - Present* | *Philadelphia, PA*

- Founded software systems lab shipping Rust/TypeScript infrastructure for AI-native workflows, declared state, release-gated systems, and evidence-bearing runtime boundaries.
- Design proof-oriented substrates for agents and humans: receipts, replay, provenance, query/walk paths, projection discipline, human-in-the-loop controls, and explicit trust boundaries.
- Own end-to-end product engineering: package/crate design, docs, changelogs, release notes, audits, CI gates, benchmark/coverage artifacts, and public-facing developer surfaces.
- Translate mortgage/SMB operations into software primitives for borrower state, document workflows, policy lineage, handoffs, and operator-readable evidence.

Go Loan Go, LLC | **Founder** | **Mortgage Systems Builder & Independent Broker** | *Jan 2021 - Dec 2025* | *Drexel Hill, PA*

- Founded and operated an independent mortgage brokerage built around client-specific lending strategy, lender research, scenario analysis, and lean automation.
- Built and maintained a Webflow mortgage site with custom JavaScript calculators, embedded workflows, iframe tools, SuiteDash integrations, and API-backed third-party services.
- Used GPT-assisted tooling and automation to streamline borrower intake, document handling, communication, scenario research, and internal decision support.
- Translated complex lending, regulatory, and technical information into clear decision paths for clients while managing compliance-sensitive workflows and low-overhead operations.

Office Service Solutions, Inc. | **Client Success & Business Systems Strategist** | **Accounting & Operations** | *Sep 2022 - Feb 2025* | *New Castle, DE*

- Worked across accounting operations, client service, internal systems, technical research, and process improvement for a small-business services environment.
- Helped design and refine internal workflows, including Written Information Security Program support; translated risk/security requirements into repeatable systems.
- Served as liaison between internal teams and outsourced IT, clarifying requirements, scoping constraints, validating implementations, and improving tooling decisions.
- Researched AI tools, automation opportunities, and workflow systems; contributed concept, workflow framing, and positioning for Agent Ledger.

EARLIER EXPERIENCE

MTI Global Services | Field Technician II | Retail Technology & Network Infrastructure | *Jun 2018 - Feb 2022 | Southern New Jersey*

- Performed field installation, repair, merchandising, and support for distributed retail technology environments across third-party client sites.
- Installed and maintained mobile device displays, retail fixtures, alarms, low-voltage/security hardware, and related in-store technology systems.
- Supported network hardware replacements and coordinated with remote network engineers during on-site infrastructure changes; completed site surveys, photo documentation, reporting, scheduling, and issue tracking.

Freedom Mortgage | Loan Advisor | *Aug 2017 - Jun 2018 | Fort Washington, PA*

- Originated and advised on consumer-direct mortgage loans, with focus on customized refinance scenarios and borrower-specific financial constraints.
- Managed pipeline prioritization, borrower communication, documentation flow, and compliance-sensitive loan processes; maintained mortgage licensing across 25 states.

New Penn Financial, LLC | Mortgage Consultant - Rate 30 Mortgage | *Jan 2017 - Aug 2017 | Plymouth Meeting, PA*

- Advised borrowers through the loan application process, matching mortgage products to financial profiles, constraints, and goals.
- Developed early expertise in loan origination, compliance requirements, borrower follow-up, and client-facing financial explanation; scored 90% on the NMLS assessment and maintained active mortgage licenses across 17 states.

EDUCATION

Delaware County Community College - Associate's Degree, General Studies (2009 - 2013)

Languages: English (native/bilingual), Arabic (elementary)