

JOSEPH M. CHIRUM

Senior Software Engineer | AI Systems, Knowledge Graphs & Full-Stack Platforms

Eugene, Oregon | jchirum@gmail.com
joechirum.com | github.com/sundog358 | linkedin.com/in/joseph-chirum

PROFESSIONAL SUMMARY

Senior software engineer, 19 years in web development, with seven self-directed systems built, deployed, and operated solo on their own domains. Six of the seven were designed and shipped to production in 2026. Specializes in governed multi-agent AI, evidence-grounded research pipelines, knowledge graphs, and Linked Art standards. Four of the seven interoperate over published Linked Art specs with signed callbacks in production.

CORE TECHNICAL SKILLS

Languages & Frameworks: TypeScript, Python, JavaScript, .NET, Next.js 16, React 19, FastAPI, Flask, Astro

Data & Standards: PostgreSQL, MongoDB Atlas, Cloudflare D1, Solr, SPARQL, RDF / JSON-LD, CIDOC-CRM, Linked Art, IIIF

AI & Agent Frameworks: AG2 / AutoGen, LangChain, Microsoft Semantic Kernel, RAG, ChromaDB, pgvector, OpenTelemetry, SSE

Cloud, APIs & Quality: Docker, Vercel, Cloudflare Workers, GitHub Actions, GraphQL, Shopify, REST, Vitest, Node:test, SHACL, axe, Lighthouse

PROFESSIONAL EXPERIENCE

Software Engineer / Founder | Sun and Rain Works | Eugene, OR | 2007–Present (firm founded 2005)

- Designed, built, and operate seven production systems, each with documented architecture and a test slate.
- Spans agent orchestration, CIDOC-CRM pipelines, semantic search, headless commerce, and multi-cloud deploys.

MetaGen Auto, Multi-Agent AI Operations Platform | metagenauto.com

- Engineered an 11-agent AG2 council with three-tier RBAC and a propose-only merge boundary.
- Deployed a Next.js 16 hub on Vercel with SSE streams, OpenTelemetry tracing, and a Python AG2 bridge on Render.
- Grew the merge bar from 71 to a 336-gate verification slate, and drove untriggered tests from 23 to 0.
- Added an adversarial agent that steelmans the rejected option before every human approval gate.
- Built a quotation verifier that proves every quoted line verbatim against its source before use.

Meta Museum, Federated Museum Data Platform | metamuseum.org

- Built a SHACL-gated CI pipeline verifying CIDOC-CRM JSON-LD expands to valid RDF at the MUST level.
- Integrated 14 museum collection APIs into a rights-aware Linked Art 1.0 graph with multi-tenant RBAC.
- Produced a 1,704-test suite, a CI-gated 89.4% coverage floor, and a 105-case accessibility matrix.
- Shipped Claude agents under cite-or-refuse gates, with server-only keys and an auth-gated paid path.
- Upstreamed to the Linked Art spec: one open PR, plus implementer input the editor quoted in #362.

MetaHistoryBook, Historical Research Platform | metahistorybook.com

- Implemented citation-grounded AI dossiers graded by a coverage gate before any dossier is served.
- Built a typed Drizzle, Postgres, and pgvector layer validated by 330 Vitest tests on in-memory PGLite.
- Engineered a live Wikidata drift probe protecting the pipeline from upstream schema changes.
- Published a free versioned read API and an IIIF activity stream consumed over a published spec.

Sun & Rain Works Storefront, Headless Commerce | sunandrainworks.com

- Built a Next.js 16 headless Shopify storefront on Vercel with Storefront GraphQL and Printful.
- Implemented HMAC webhook verification, config-aware health checks, and custom AI product photography.
- Extended it into a public-domain library of 103 USDA documents, with GA4 carried into Shopify checkout.

SELECTED ADDITIONAL PRODUCTION SYSTEMS

Wikidata Explorer, Linked Data Research App | wikidataexplorer.com | **Open Source**

- Built evidence-first Wikidata search, graph visualization, and safe exports with optional AG2 agents.
- Integrated it as a named client of a Linked Art change feed, reconciling 53 of 53 activities.

Artwork of the Day, Daily Art-History Experience | daily.metahistorybook.com | **Open Source**

- Built a deterministic Flask system for fully cited art-history articles, republished as Linked Art and IIIF.

Big Aloha Guide, Hawaii Travel & Culture Site | bigalohaguide.com

- Produced 2,389 citation-gated narrations across 2,700 static pages, on Cloudflare Workers and D1.
- Ran an eleven-agent review pipeline in which no agent publishes without recorded human approval.

LICENSES & CERTIFICATIONS

- IBM: Data Fundamentals, Artificial Intelligence Fundamentals, and AI Literacy (2026)
- Neo4j Importing Data Fundamentals (2024) | ACT National Career Readiness Certificate, Platinum (2019)

EDUCATION

Pennsylvania State University | University Park, PA • B.A. Philosophy, 2004 • B.A. Religious Studies, 2004

Lane Community College | Eugene, OR • Computer Programming and Web Development, 2022 • Energy Efficiency, 2005–06

Joseph M. Chirum