

Costain Nachuma

Software Engineer — Backend Systems & Developer Tooling

📍 Pocatello, ID | ✉ costain01@gmail.com | 📞 (208) 479-7702 | 🔗 [linkedin.com/in/costaincodes](https://www.linkedin.com/in/costaincodes) | 🌐 costain.github.io

Summary

Software engineer and PhD student who ships production tooling end-to-end: designed and released a 5-layer Eclipse IDE plugin integrating three LLM backends, and built Python/graph-database pipelines processing 14M+ records. 9+ years of prior industry experience leading engineering and infrastructure for a 500+ user government network. 6 peer-reviewed publications (124+ citations); Team Lead for a 2,000+ attendee AI summit.

Technical Skills

Languages	Python, Java, C#, JavaScript, SQL
Data & DB	PostgreSQL, MySQL, Oracle, Neo4j (Cypher/graph queries), DuckDB, Parquet
Systems	Git, Docker, GitHub Actions (CI/CD), Linux, JGit, Eclipse JDT
LLM APIs	Multi-provider LLM integration (Anthropic Claude, OpenAI, Ollama), prompt/context engineering, graph-grounded retrieval design
Automation	REST API integration, HTML parsing (BeautifulSoup), ETL scripting

Professional Experience

Graduate Research & Teaching Assistant · Idaho State University, Pocatello, ID

Aug 2023 – Present

- Designed and shipped **Comprendia**, an Eclipse IDE plugin with a 5-layer architecture (Cytoscape.js UI, JDT AST analysis engine, OSV.dev/JGit integration, and an **AiGateway** spanning three production LLM backends — Claude, OpenAI, Ollama); benchmarked across 6 code fixtures × 4 prompt modes × 3 LLM families and released publicly with a Zenodo artifact and demo video.
- Built **Graph-Aware Callee Pruning (GACP)**, an algorithm that grounds LLM prompts in a live dependency graph instead of embedding similarity, producing deterministic, auditable output reproducible across LLM families ($O(V + E)$ reachability filter).
- Built a Python/DuckDB pipeline processing 33,596 GitHub pull requests across 2,807 repositories, and a separate Neo4j-backed pipeline querying 14.4M+ package releases for dependency-vulnerability analysis (21-hour batch job on a 64GB/24-core system); mentored 20+ students.

Instructor of Record — CS 3309: Advanced Object-Oriented Programming

Idaho State University, Pocatello, ID

Fall 2025

- Sole instructor for a 45-student undergraduate course; independently designed the curriculum, delivered all lectures, and graded consistently — rated 3.50/4.0 for overall teaching effectiveness (90% agree/strongly agree) in end-of-term evaluations.

Software Developer, Technical Support Specialist

National Assembly of Zambia, Lusaka, Zambia

Jun 2012 – Aug 2018

- Provided technical support for 500+ staff and built an automated provisioning script for a country-wide network, cutting configuration time 90% (100% consistent) and issue resolution time 30%.

Senior Support Specialist, Software Engineer

National Assembly of Zambia, Lusaka, Zambia

Aug 2020 – Aug 2023

- Led modernization of parliamentary web platforms and designed a testing protocol for high-stakes congressional sessions (VP, ministers, MPs), raising pre-meeting error discovery to ~95%.

Selected Projects

- Comprendia** (Java, Eclipse plugin) — dependency-graph visualization + LLM code explanation + clone/CVE overlays. Artifact: doi.org/10.5281/zenodo.20436759 | Demo: youtu.be/1wlh_RYehzA
- Chromium Bug ETL Pipeline** (Python) — 5-script scraping/HTML-parsing pipeline against the live Chromium issue tracker (worked around its 1,000-record API cap); powered a study of 5,575 security and 4,605 performance bug reports.

Education

Idaho State University · Ph.D., Computer Science, GPA 4.0, Pocatello, ID

Aug 2023 – May 2027

University of New Orleans · M.Sc. in Computer Science, New Orleans, LA

2018 – 2020

University of Zambia · B.Sc. in Computer Science, Lusaka, Zambia

2007 – 2011