

Akil Abderrahim

ML/AI Engineer

[aakilabderr22@gmail.com] · [linkedin.com/in/aakil1998] · [github.com/Aakil98] · [madahub.org]
Location: Flexible — remote, hybrid, or relocation

PROFILE

ML/AI Engineer bridging data science, LLM infrastructure, and protocol design. Built **madakit** — a zero-dependency universal AI client library for 21 providers published on PyPI — and **context-lens**, an npm-published LLM context quality measurement tool. Transitioned from civil engineering through formal data science training into AI systems engineering. Designs specification-first, ships production-grade Python and TypeScript.

TECHNICAL SKILLS

Languages: Python, TypeScript, Rust, SQL

AI/ML: LLM integration (OpenAI, Anthropic, Gemini, DeepSeek, Ollama, local models), prompt engineering, multi-agent orchestration, computer vision, data pipelines, RAG, token/cost optimization

Infrastructure: Docker, PostgreSQL, SQLite, CI/CD (GitHub Actions), FastAPI, Bun runtime

Frontend: Next.js, Streamlit, Astro, Tailwind CSS

Practices: TDD (pytest), mypy strict, specification-driven design, zero-dependency core architectures

SELECTED PROJECTS

madakit — Universal AI Client Library (PyPI)

Zero-dependency, provider-agnostic client for 21 LLM providers with 16 composable middleware components (retry, circuit breaker, caching, rate limiting, cost control, load balancing, consensus). Async-first with streaming, token tracking, and full type safety.

Python 3.11+, decorator pattern, async architecture

context-lens — LLM Context Quality Measurement (npm)

TypeScript library that scores context window quality across four dimensions (coherence, density, relevance, continuity) using structural signals — no LLM calls. Detects five degradation patterns, generates eviction advice with impact estimates, and supports fleet monitoring for multi-agent setups.

TypeScript 5.x (strict), zero runtime dependencies, OpenTelemetry-ready

Mirror Frame Protocol (MFP) — pymfp v1.0.0 (PyPI)

End-to-end encrypted peer-to-peer agent communication protocol. Transport-agnostic with bilateral TCP channels, Merkle tree $O(\log N)$ state updates, and SQLite persistence. 860 tests passing, AES-256-GCM AEAD, HMAC-SHA256.

Python 3.11+, cryptographic primitives, protocol engineering

Tessera — Secure P2P File Sharing (318+ tests)

Encrypted peer-to-peer file sharing with content-addressed storage, Merkle tree verification, swarm-based transfer, and AI-enhanced discovery routing via madakit. 13 specification documents covering 10 threat scenarios.

Python 3.11+, MFP, madakit, async architecture

WACP — Agent Coordination Protocol (20 specs)

Formal protocol for autonomous AI agent coordination. Hash-chained audit trails, capability-based security, 11 signal types, fault-tolerant replay semantics. Rust implementation with Protobuf/gRPC transport layer.

Protocol design, Rust, Protobuf, gRPC

EDUCATION

Data Science Bootcamp — Le Wagon Institut, 2025

Full-stack Development Bootcamp — Le Wagon Institut, 2024

Civil Engineering — Hassania School of Public Works, 2022

WHAT I BRING

Design-first engineering: Every project starts as formal specifications with threat models before implementation.

Zero-dependency discipline: Core libraries ship on stdlib alone — dependencies are liabilities, not shortcuts.

Full-stack range: From cryptographic primitives to LLM observability. From Rust crates to Astro portals.