AEO Engine

Self-hosted AI Engine Optimization Platform

The Problem

AI engines (ChatGPT, Claude, Gemini, Perplexity) are replacing traditional search for millions of users. When someone asks "what's the best CRM tool?", the AI's answer determines who gets the customer. There is no reliable way to know whether your brand appears in those answers, how often, in what context, or what you can do to improve it.

The Solution

AEO Engine tracks your brand's visibility across AI models, validates whether your content earns citations through real LLM probes, scores content with a 3-component system weighted toward actual citation likelihood, and optimizes content based on competitive intelligence. Self-hosted. Open source. Works with any brand.

How It Works

1. Define your brand, keywords, and competitors
2. Create probe queries ("What are the best CRM tools?", "Compare top sales platforms")
3. Run probes against 4 LLM providers (GPT-4o-mini, Claude Haiku, Gemini Flash, Perplexity Sonar)
4. 3-layer citation detection: URL matching, name matching, domain matching
5. Score content: Structural (20%) + Citation Validation (50%) + Competitive Gap (30%)
6. Optimize content based on probe results and competitor patterns
7. Re-probe to validate improvements. Track trends on the dashboard.

Scoring: The Core Difference

Traditional AEO scores are circular: generate content with FAQ sections, then check if those exist. AEO Engine's Citation Validation component (50% of the score) sends real queries to LLMs and checks if your brand gets cited. The Competitive Gap component (30%) compares your citation rate against competitors. Structural analysis (20%) covers schema markup, headings, and readability.

Core Capabilities

Citation Tracking -- Query 4 providers, detect mentions with confidence scoring (0.5-1.0)
Competitive Analysis -- Head-to-head profiles, SWOT insights, gap identification
Content Generation -- 3-stage pipeline (research, draft, JSON-LD schema)
Content Optimization -- Rewrite from probe data + competitor patterns, before/after diffs
Content Briefs -- Data-driven briefs from competitive gaps
Visibility Dashboard -- Trends, share-of-voice, provider heatmap, cost tracking
Content Pipeline -- Drag-and-drop Kanban (Idea > Draft > Review > Published)
Alerts -- Citation gained/lost, competitor surge, sentiment drop, cost spike
Scheduling -- Cron-based automated probe execution

Architecture

Next.js 15 (App Router) + React 19 + TypeScript + Tailwind CSS 4 + Prisma ORM + SQLite (swappable to PostgreSQL). 22 API routes, 9 pages, 13 lib modules, 11 database models. LLM integration via unified adapter layer supporting OpenAI, Anthropic, Google Generative AI, and Perplexity. Per-provider rate limiting (100K tokens/min, $5/day cap). SHA-256 keyed caching (24h probes, 7d content).

Cost Profile

Probing uses cheap models. A full probe across 4 providers costs ~$0.002-0.005. Running 10 probes daily across 4 providers costs under $2/month. Content generation with stronger models costs $0.05-0.15 per article.

Quick Start

```
git clone https://github.com/AnthonyAlcaraz/aeo-engine.git
cd aeo-engine && npm install
# Add API keys to .env (at least one provider)
npx prisma db push && npm run dev
Open http://localhost:3000 -- 4-step onboarding wizard guides setup.
```