

SIEGFRIED MARTENS

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SUMMARY

Founder of Daedalus, a one-person AI studio, and a principal-level ML engineer with twenty-five years of production systems: knowledge graphs, agents, simulation, and the interfaces that make them legible. PhD in neural networks. Ships whole systems solo and publishes the evaluation alongside them.

CORE COMPETENCIES

- **Knowledge systems:** knowledge graph design, entity resolution across heterogeneous sources (Wikidata-keyed), relational schema design, PostgreSQL, data pipelines with rate limiting and fault tolerance
- **AI systems:** retrieval-augmented generation, multi-channel routing, agentic auditing, evaluation harnesses (gold sets, held-out benchmarks, controls), cost instrumentation, LLM APIs
- **Machine learning:** neural networks, NLP, recommender systems, simulation and agent-based modeling, PyTorch, TensorFlow, scikit-learn
- **Engineering and visualization:** Python, SQL, FastAPI, Cloudflare Workers, static-first web deployment, Tableau, Plotly/Dash, D3-free hand-built interfaces

PROFESSIONAL EXPERIENCE

Founder & Lead Engineer · Daedalus · Arlington, MA · June 2025 to present

- Built a music knowledge graph end to end and solo: Wikipedia, Wikidata, MusicBrainz and Spotify reconciled onto Wikidata identifiers, 40,000 artists and 2,900 styles in a normalized PostgreSQL schema, every source claim stored with its claimant so reconciliation is a recomputable view rather than a commitment
- Shipped **Orpheus** (orpheus.rocks, May 2026): the graph as 43,000 interlinked rooms served as static files, no backend, no database at request time; 111,728 files, 1.4 GB, hosted for the price of a domain
- Shipped **Pythia** (ask.orpheus.rocks, August 2026): a retrieval oracle over the graph with eight retrieval channels behind a router, answering in prose with every claim linked to its room; served through a Cloudflare Worker with bot challenge, per-IP limits and a daily budget cap with a \$0 retrieval-only floor
- Evaluation-first: the gold set existed before the first channel (recall@10 40% on day two; at launch 89%, with hit@10 100% and MRR 94%, across 115 questions in 13 shapes, measured by calling production code); then three public benchmarks nobody in-house wrote (hit@10 97% on 610 ArtistMus questions, 85% on 2,085 from Mintaka, and Reddit2Deezer), with predictions filed before the runs and every headline number checked against a control
- Built **Minotaur**, an agent that audits the corpus from inside: navigates the same rooms a person does, proposes its own issue taxonomy, logs every reasoning step to a live dashboard (Phase 1: 130 rooms, 306 findings, 12 self-discovered categories, \$1.81)
- Built **Ariadne**, coordinated network, geographic and temporal views of the whole graph on Tableau Public, whose “Who is / Where is this style” panels became the correctness tool that exposed homonym errors no count could see
- Data quality: contamination detection, style-origin estimation with measured error, identity-drift repair across merged Wikidata items and doubled MusicBrainz ids; decision records for every non-obvious choice
- Publishes the work: five technical notes at s-martens.com/notes on the data reconciliation, the static architecture, the evaluation harness, held-out measurement, and the controls that corrected it

Visualization and Data Science Lead · Stella Automotive AI · remote · March 2023 to February 2024

- Fleet-scale monitoring and alerting for AI voice agents operating across hundreds of auto dealerships
- Automated reporting and dashboards that put system performance in front of customer success and sales

Lead Data Scientist, Platform AI Group · Telepathy Labs · remote · January 2018 to February 2023

- Deep-neural-network risk scoring for roughly eight million users of KnowBe4's security-awareness platform (TensorFlow, PySpark, SageMaker); granted US patent 10,673,876
- Predictive models and recommenders for enterprise clients: session recommendation (NLP) and purchase forecasting (PyTorch RNN); Gartner lead generation +20%; 600,000 Best Buy support chats analyzed
- Led cross-functional teams from prototype to deployment

Senior Scientist · Icosystem · Cambridge, MA · 2006 to 2017

- Agent-based models for the US Navy: STEER, a 400,000-agent model of the enlisted workforce; CRIMSON, a sentiment model calibrated against real incident data
- Medicare market simulation for a Fortune 500 insurer, validated against years of historical market data and used to steer plan design; CFO-credited with a 100:1 return
- Led La Poste's interactive-evolution route-design software through its national rollout, presented in French to the national technical team; it ran in every French post office for a decade
- Nymbler, Icosystem's own product: an interactive-evolution name recommender, US patent 8,725,755, a Time top-50 website
- Polyseries, a visualization framework for population behavior over time (IEEE VisWeek 2010); CDN and web-traffic analyses delivered as visual exploratory reports

Postdoctoral Research Associate · Boston University, Cognitive and Neural Systems · 2003 to 2006

- Neural network architectures for sensor fusion and remote sensing; open-source ARTMAP implementations for technology transfer (Neural Networks, 2005)

Earlier: Research Scientist, Verbind (2000 to 2002) and Artificial Life (1998 to 1999); Software Engineer, MIT Lincoln Laboratory (1989 to 1994), FAA air-traffic simulation

EDUCATION

- **PhD, Cognitive and Neural Systems**, Boston University (1999): neural network architectures for satellite remote sensing and robotic sensor interpretation (Remote Sensing of Environment, 1999, two papers)
- **BA, Computer Science**, Dartmouth College

PATENTS

- US 10,673,876 (granted 2020): systems and methods for determining individual and group risk scores
- US 8,725,755: methods and apparatus for interactive name searching techniques

LANGUAGES

English and French (native); working knowledge of Spanish