

Kenneth A. Mendoza

Independent researcher · Founder & Principal Investigator, Mendoza Laboratory ·
Founder, Oregon Coast AI LLC

CONTACT

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CORE CAPABILITIES

Scientific computing & RSE

Python, NumPy, pandas, SciPy, Qiskit, SQL, Bash;
reproducible runners, checksum-backed artifacts,
structured reports.

AI & knowledge infrastructure

Ontology-driven research engines, vector search
and retrieval, agentic workflows, provenance-first
literature analysis.

Formal methods

Lean 4 / Mathlib formalization, proof-status
discipline, formal-conjectures contribution
workflow.

Dynamical-systems modeling

Koopman / EDMD, Takens embeddings, entropy &
covariance-manifold features, early-warning
signatures, abstention logic.

Biomedical & proteomics

LIMS architecture, biomarker / protein-interaction
workflows, ECG / cardiac signal analysis, gene-
expression cohort routing.

Patent & IP operations

Provisional-packet assembly, claim / evidence
binding, public-disclosure checks, registry
governance.

TECHNICAL STACK

Python Rust NumPy pandas
SciPy Qiskit Lean 4 Mathlib
TypeScript JavaScript Node.js
SQL Bash Cloudflare Workers
D1 R2/KV/Vectorize SQLite
Vector DB Playwright Git
LaTeX

EDUCATION

PROFILE

Independent researcher and scientific software engineer working at the intersection of information theory, Riemannian geometry, dynamical systems, formal verification, and computational biology. 25+ years across computational science and software systems — startup technical leadership, biomedical and proteomics IP, scientific computing, and AI research infrastructure. Current posture is in-silico and evidence-bound: public datasets, documented reference systems, reproducible artifacts, explicit claim ceilings, and adversarial / falsification accounting.

CURRENT RESEARCH PLATFORMS

Mendoza Laboratory

Founder & Principal Investigator · independent research laboratory

- Builds computational methods rooted in information theory and Riemannian geometry, then tests them through artifact-backed computational case studies.
- Maintains public research surfaces for formal mathematics, critical-transition detection, biomedical translation, and evidence / artifact tracking.
- Coordinates work across biomedicine, materials science, climate science, dynamical systems, quantum benchmarks, AI interpretability, and formal mathematics.
- Keeps claims scoped to evidence — supported, inconclusive, target-only, falsified, or no-artifact states are tracked separately.

Mendoza Research Portfolio

Independent research program

- Federated portfolio with a master research repository, satellite projects, model and dataset governance, claim-evidence scoreboards, and patent registries.
- Internal registry tracks 37 projects, including H2AI, H2Clime, H2d-Med, RPQEC, HSpLang, and Math-Lean4.
- One mathematical coordinate system applied carefully across substrates — without treating cross-domain method reuse as cross-domain validation.

PATENTS & INTELLECTUAL PROPERTY

Filed U.S. provisional applications · patent-pending

CARDIO-01

Device-invariant ECG / cardiac dynamical-state classification
U.S. Provisional Application 64/088,812 · filed 2026-06-12

FM-01

Fibromyalgia molecular phenotyping and cohort stratification
U.S. Provisional Application 64/090,170 · filed 2026-06-14

SEP-01

Sepsis whole-blood gene-expression spectral-entropy analysis
U.S. Provisional Application 64/091,410 · filed 2026-06-16

SPECTRAL-EWS-01

B.S., Microbiology

University of California, Los Angeles · 1988

B.A., Political Science

University of California, Los Angeles · 1988

Graduate studies, Philosophy of Science

Cornell University · 1989

FORMAL-METHODS OUTPUTS

- Contributor to Google DeepMind's formal-conjectures repository — public MendozaLab record shows two merged pull requests, with three more approved or under review.
- Erdős / formal-math work: cataloging and morphism-mapping of Erdős problems, Lean-oriented proof / status discipline, and artifact-backed writeups.
- Google Scholar profile lists independent research in quantum / classical systems modeling, dynamical systems and control, and state-based modeling.

Early-warning / critical-transition condition monitoring

U.S. Provisional Application 64/091,446 · filed 2026-06-16

Issued U.S. patents · named co-inventor

- US8008253B2 Treatment for anxiety
- US8536129B2 Treatment for anxiety
- US8633160B2 Small molecule inhibitors of PDZ interactions

PROFESSIONAL EXPERIENCE

Mendoza Laboratory / Independent R&D

2020 – Present

Scientific Software Engineer · Founder · Principal Investigator

- Built computational research systems for dynamical-systems discovery, formal mathematics, medical diagnostics, molecular phenotyping, sepsis gene-expression analysis, early-warning signals, and quantum error correction.
- Designed reproducible experiment workflows — structured *_RESULTS.json, *_REPORT.md, and checksum sidecars — with claim-evidence governance across scientific, patent, and public surfaces.
- Created and maintains public research portals at kenmendoza.com and mendozalab.io.

Oregon Coast AI LLC

2024 – Present

Founder · Chief Developer

- Built AI-native research and product infrastructure: ontology-driven research engines, provenance-first literature analysis, and public technical sites.
- Edge / web systems on Cloudflare (Workers, D1, R2/KV), TypeScript / JavaScript, and Python services with agent-assisted workflows.

Independent Consultant / Systems Architect

2008 – 2024

Self-employed

- Delivered technical architecture, software, data, web, imaging, and AI / automation work across independent projects — a long-running bridge between production practice and independent research.

Arbor Vita Corporation / NoNO Inc.

2000s

Biomedical Software Engineer · Systems Integration · Patent Co-Inventor

- Biomedical software, proteomics, and LIMS / data systems; PDZ-domain / neuroprotective therapeutic IP programs. Named co-inventor on issued U.S. patents tied to later clinical-stage neuroprotection work.

Digital Lava Corporation

c. 1997 – 2002

Co-founder · Technical Architect · R&D Leadership

- Co-founded and helped architect technology for a company that completed a NASDAQ IPO in 2000; scalable production systems, engineering process, and enterprise software architecture.

TIMSS / Education Assessment Infrastructure

1996

Technical Architect

- Built technical infrastructure supporting large-scale international education-assessment data workflows.