



2 Clearances

DUAL FDA 510(K)

K240236 & K242224
(HR, Sp02, TST, AHI)

25 Patents

ISSUED (21 US, 4 INT'L)

Bio-Signals & Transduction

36 Papers

PEER-REVIEWED

758 Citations
(ACM TOMS, PRB, npj)

20+ Years

PRODUCTION SYSTEMS

Ph.D. Physics (BYU)

CONTINUUM OF COMPUTING

Bridging Quantum Physics, Embedded Silicon & Cloud Scale

A 20+ year polymath engineering trajectory uniting the full vertical continuum of computing: from quantum materials informatics and non-invasive tissue biophysics to hard real-time ARM firmware, SELinux AOSP platform security, bare-metal HA clusters, and distributed cloud DAG execution engines.





Signature Case Studies & Strategic Impact

PROVEN MISSION-CRITICAL EXECUTION • ZERO TO ONE •
PRODUCTION SCALE

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[Interactive Portfolio](#) →

[GitHub](#) →

PRODUCTION MILESTONES

Four Signature Architectural Case Studies

Clinical Bio-Signals & FDA Clearance

510(k) CLEARED

Optical simulation across multi-spectral, multimodal sensor packs. Zero-latency feature extraction pipeline for real-time biometric predictions on ultra-low-power wearables.

Impact: 2 FDA 510(k) clearances (K240236, K242224) for HR, SpO2, TST, Sleep Apnea (AHI). 25 issued patents. BP pending.

sciona: Neuro-Symbolic Synthesis

sciona

Deterministic-First Sandwich architecture: Deterministic tools → LLM fallback → AST verifiers. Interval-arithmetic precision gradients with coordinate descent meta-optimizer for rigorous scientific computation.

Impact: 55% token cost reduction vs brute-force LLMs. 100x speed-up. 100% formal verification with provable convergence.

Idempotent Cloud DAGs (hpy-eventx)

CLOUD DAG

Distributed exactly-once event streaming engine enforcing causal business rules, graph validation, multi-agent task execution graphs, Lambda@Edge attribution, and analytical telemetry.

Impact: Million-event daily throughput, zero duplicate states, sub-millisecond node resolution, fault-tolerant replay.

AOSP Sandboxing & Bare-Metal HA Ops

ENTERPRISE OPS

Hardened AOSP operating system with MLS SELinux sandboxing and StrongBox Keymaster. Hand-built multi-datacenter bare-metal Windows Server Failover Cluster (WSFC) and VMware hypervisors.

Impact: 6 years continuous 99.9% uptime, zero security breaches, sub-second failover across clusters.

LEADERSHIP ARCHETYPES

Areas of High-Leverage Strategic Impact

Principal Systems Architect

End-to-end technical strategy bridging firmware, platform security, biophysics, and cloud backends.

Fractional CTO & Co-Founder

De-risking novel moonshots from zero to one with deterministic engineering foundations and team hiring.

Medical Device R&D Lead

Directing biomedical algorithm engineering, tissue modeling, clinical validation, and FDA 510(k) filings.

Cloud & Agent Systems

High-throughput event streaming, idempotent DAG engines, and autonomous multi-agent graph pipelines.

Availability & Professional Engagement

Currently Principal Data Scientist & Systems Architect full-time at [Happy Health](#). While not taking on active side commitments, I welcome high-SNR technical discussions, architectural advisory dialogues, and connections with fellow founders, executives, and engineering peers.

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