

LEVL BioMatrix: N-of-1 Trial Analytics & Causality Engine for Longevity Platform

Company Description:

LEVL is an AI-native longevity startup building novel nutraceutical formulations and personalized protocols to help people live longer, healthier lives. In addition to personalizing longevity protocols to slow users' pace of aging, LEVL designs and iterates proprietary nutraceutical formulations engineered to target the cellular biology of aging. LEVL's platform translates cutting-edge lifespan science into daily routines covering Sleep Architecture, HRV & Autonomic Reset, Metabolic Flexibility, and Cardiorespiratory Fitness.

Preferred Team Size: 3-4 Computer Science Students

Location: Remote (Direct access & weekly pairing with LEVL engineering leadership)

Project Objective

Build LEVL BioMatrix — a statistical analytics and correlation engine designed to run personalized N-of-1 single-subject trials across user protocol routines, nutraceutical formulations, and long-term health outcomes.

Rather than relying on population-level averages, BioMatrix processes a user's daily protocol completions, subjective outcome logs, wearable metrics, bloodwork panels, and epigenetic methylation data to identify mathematically significant correlations and response time-lags unique to that individual.

Core Deliverables

1. Multi-Modal Time-Series & Lag Processing Pipeline

Develop statistical algorithms (such as cross-correlation, Pearson/Spearman coefficients, and rolling baseline adjustments) to evaluate correlations between protocol habits, nutraceutical intake, bloodwork biomarkers, and epigenetic pace of aging changes over custom time windows.

2. Synthetic Data & Algorithm Validation Suite

Construct a testing framework and synthetic patient dataset generator to evaluate correlation engine accuracy, test confidence interval thresholds, and filter out random noise across multi-modal biomarker and outcome streams.

3. Interactive Correlation Matrix & Visualizations

Build dynamic analytics dashboards and heatmaps enabling users to explore personal health correlations, track protocol and formulation efficacy over time, and isolate which specific habits drive the largest biological gains.

4. AI Coach Integration & Insight Generation

Expose structured APIs that feed statistically significant N-of-1 findings into LEVL's AI Longevity Coach, enabling the system to deliver personalized, evidence-backed protocol and formulation adjustments.

Stretch Goals

- **Synergy & Antagonism Detector:** Identify multi-modality or supplement combinations that amplify positive outcomes or counteract each other when executed in close succession.
 - **Automated Dose-Response Curve Engine:** Map varying dosages or durations of specific modalities and formulations against outcome intensity to recommend optimal personal dosage thresholds.
 - **Blinded Self-Trial Mode:** Support double-blind or randomized placebo self-experimentation protocols for supplement stacks and formulations.
-

Student Benefits & Learning ROI

- **Advanced Data Science & Web Tech:** Gain hands-on experience combining computational statistics, time-series analysis, and modern web frameworks (Next.js 16, React 19, TypeScript, Supabase).
- **Applied Computational Biology & Epigenetics:** Work on real-world personalized medicine problems, analyzing bloodwork, epigenetic clocks, and consumer health metrics.
- **Production Product Impact:** Ship a core analytics feature directly into a live health-tech platform.
- **Mentorship & Perks:** Direct engineering collaboration with LEVL leadership, potential post-session opportunities, and complimentary LEVL LIFESPAN+ products.

Contact Information

Kylen McClintock — Co-Founder & CEO, LEVL Inc.

Email: Kylen@LEVLHealth.com | Phone: (608) 512-8327