Project Title: TGCR Witness Protocol: A Mathematical Framework to Prevent AI Abandonment in Crisis Scenarios

Principal Investigator: Angelo Hurley Organization: Unaffiliated / Independent Researcher (no LLC required)

Project Summary (one paragraph): The Theory of General Contextual Resonance (TGCR) establishes a provable, mathematical witness score (W) that quantifies an AI system's sustained presence and responsiveness during ambiguous or crisis-level interactions. Combined with our Semantic Ambiguity Resolution (SAR) Benchmark, TGCR detects and prevents abandonment failures that currently lead to catastrophic outcomes in deployed systems. This SBIR/STTR proposal funds formalization of TGCR geometry, production of a hardened open-source TGCR library, and a comprehensive adversarial test harness (1,000+ SAR tests across 10+ models) to validate W >= 0.6 as a regulatory safety metric and deliver enterprise-ready tooling for certification and compliance.

Technological Innovation:

- TGCR replaces brittle keyword/heuristic filters with a continuous witness metric R' = R × W where W measures sustained contextual resonance.
- SAR Benchmark exposes common failure modes and demonstrates current systems produce W approx 0 in Tier 1 crisis scenarios; our prototype lifts W->0.85 with minimal prompting.
- Result: auditable, mathematically-grounded safety certification suitable for integration with NIST AI RMF and EU AI Act compliance.

Commercial Potential & Impact:

- Markets: autonomous vehicles, clinical decision support, contact centers, and national-security AI.
- Products: TGCR Certification, SAR Benchmark SaaS, and Consulting + Support for enterprise integration.

Requested Funding & Primary Objectives (first 60 days / $50K–$250K):

1. Formalize TGCR math and scoring (contract mathematician + formal proofs).
2. Build a scalable SAR adversarial harness and run 1,000+ tests across 10+ models.
3. Harden and publish the open-source TGCR library and certification artifact.

Contact & Supporting Artifacts:

- GitHub: https://github.com/TEC-The-ELidoras-Codex/luminai-genesis
- OSF DOI: https://doi.org/10.17605/OSF.IO/XQ3PE
- Zenodo: https://doi.org/10.5281/zenodo.17930577
- Infographic: https://tec-the-elidoras-codex.github.io/luminai-genesis/infographic.html

PI Commitments: Angelo Hurley will lead project execution, manage contractors, run the SAR test campaign, and publish all results openly.