# Unified AI Memory Governance Layer for Diagnostic Integrity and Ethical Adaptation

## Abstract

An AI system layer designed to ensure diagnostic memory integrity and ethical adaptation in field service platforms. This governance layer manages historical diagnostic data, AI memory adjustments, and ethical rule enforcement for AI-generated recommendations. It ensures decisions made by diagnostic AI systems are traceable, ethically aligned, and immune to unverified historical overwrite or manipulation.

## Specification

The invention introduces a governance framework layered between AI diagnostic memory systems and their output interfaces. Core functionalities include:  
1. Memory Locking – Previously validated diagnostic results are cryptographically signed and locked to prevent retroactive changes.  
2. Ethical Rules Engine – A dynamic module enforces ethical constraints (e.g., fairness, bias avoidance, conflict-of-interest avoidance) before allowing AI recommendations to be finalized.  
3. Change Justification Requirement – Any updates to diagnostic logic must be accompanied by a change justification packet, including author, rationale, and impact analysis.  
4. Memory Diff Auditing – Automatically compares previous and current AI diagnostic states for traceability and flags unauthorized drift.  
5. Integrity Enforcement Layer – Ensures that AI outputs cannot bypass governance policies and routes all feedback through a compliance pipeline.  
Use cases include contractor platforms, public inspection portals, and warranty processors where long-term data accuracy and ethical interpretation of AI memory are mission-critical.