Universal Consistency Engine: System Overview

The **Universal Consistency Engine** is a deterministic AI-powered platform designed to automate technical copyediting. It ensures that complex documents adhere to specific style guides regarding spelling, unit notation, and punctuation.

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1. Core Capabilities

- **Dynamic Rule Extraction:** Uses Gemini to transform human-readable style guides into structured JSON logic.
- **Deterministic Editing:** Applies rules with zero "creative drift," ensuring only violations are changed.
- **Audit Transparency:** Provides a step-by-step playback of changes, including confidence scores and reasoning for every edit.
- **Portability:** Supports "Style Packs" for instant importing and exporting of established rule sets.

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2. Workflow: How it Works

The system operates in a three-phase cycle to ensure high precision:

Phase A: The Knowledge Build (Architect Mode)

1. **Input:** User uploads a Style Guide (e.g., "Always use British spelling and no apostrophes in decades").
2. **Parsing:** The backend sends this to the AI with a "Style Architect" prompt.
3. **Output:** A JSON configuration is generated, defining **Triggers** (what to look for) and **Instructions** (how to fix it).

Phase B: The Processing Loop (Editor Mode)

1. **Input:** User pastes "messy" technical text into the dashboard.
2. **Matching:** The engine scans the text for patterns that match the JSON Triggers (e.g., it finds "1990's" or "modeled").
3. **Correction:** The AI generates a `corrected_text` block and a `changes` array containing the "Original" vs. "New" strings.

Phase C: The Visual Audit (User Review)

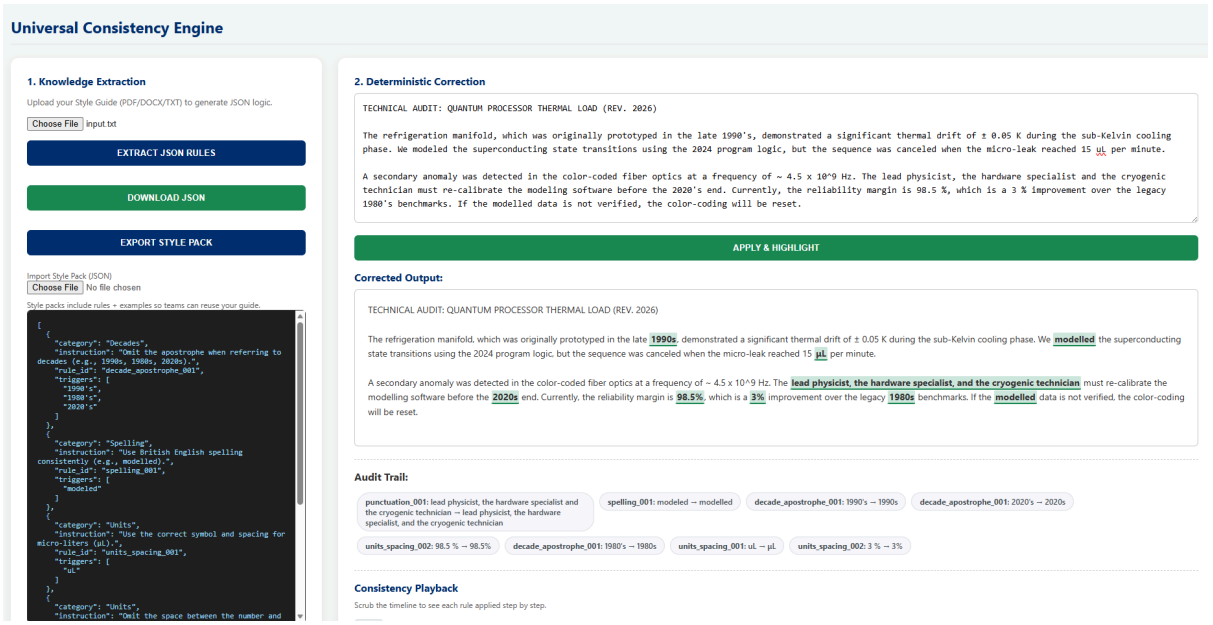
1. **Highlighting:** The UI uses the `changes` array to wrap corrected words in `<span class="hl">` tags.
2. **Playback:** The user uses the Playback Slider to see each correction happen in sequence.

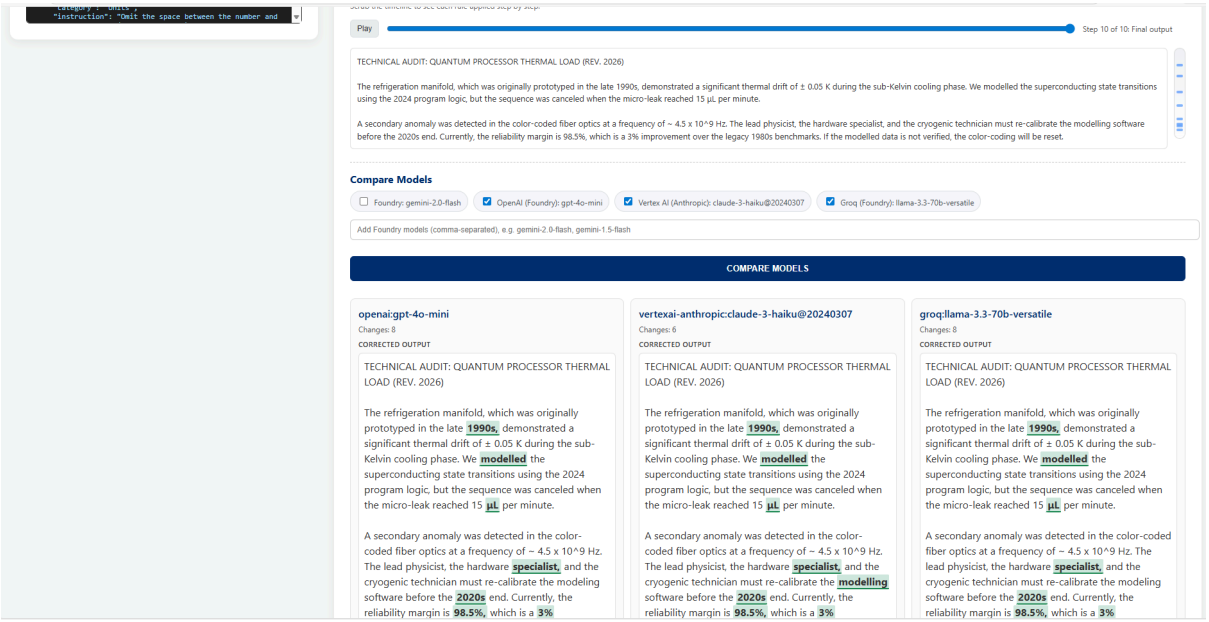
3. **Validation:** Users review the "Why" (explanation) and "Confidence" score for each pill-style audit log.

3. Technical Stack

Component	Technology	Role
Backend	**Python (Flask)**	Handles routing, file parsing, and API communication.
AI Engine	**Gemini 1.5 Flash**	Powers the Architect (rules) and the Editor (corrections).
Frontend	**HTML5 / JS / CSS3**	Manages the interactive playback, mini-map, and highlighting.
Data Format	**JSON**	The "bridge" that ensures the AI instructions are readable by the UI.

SNAPSHOTS:




"category": "units",
"instruction": "Omit the space between the number and
Play
Step 10 of 10: Final output
TECHNICAL AUDIT: QUANTUM PROCESSOR THERMAL LOAD (REV. 2026)
The refrigeration manifold, which was originally prototyped in the late 1990s, demonstrated a significant thermal drift of ± 0.05 K during the sub-Kelvin cooling phase. We modelled the superconducting state transitions using the 2024 program logic, but the sequence was canceled when the micro-leak reached 15 µL per minute.
A secondary anomaly was detected in the color-coded fiber optics at a frequency of ~ 4.5 x 10^9 Hz. The lead physicist, the hardware specialist, and the cryogenic technician must re-calibrate the modelling software before the 2020s end. Currently, the reliability margin is 98.5%, which is a 3% improvement over the legacy 1980s benchmarks. If the modelled data is not verified, the color-coding will be reset.
Compare Models
Foundry: gemini-2.0-flash
OpenAI (Foundry): gpt-4o-mini
Vertex AI (Anthropic): claude-3-haiku@20240307
Groq (Foundry): llama-3.3-70b-versatile
Add Foundry models (comma-separated), e.g. gemini-2.0-flash, gemini-1.5-flash
COMPARE MODELS
openai:gpt-4o-mini
Changes: 8
CORRECTED OUTPUT
TECHNICAL AUDIT: QUANTUM PROCESSOR THERMAL LOAD (REV. 2026)
The refrigeration manifold, which was originally prototyped in the late 1990s, demonstrated a significant thermal drift of ± 0.05 K during the sub-Kelvin cooling phase. We modelled the superconducting state transitions using the 2024 program logic, but the sequence was canceled when the micro-leak reached 15 µL per minute.
A secondary anomaly was detected in the color-coded fiber optics at a frequency of ~ 4.5 x 10^9 Hz. The lead physicist, the hardware specialist, and the cryogenic technician must re-calibrate the modeling software before the 2020s end. Currently, the reliability margin is 98.5%, which is a 3%
vertexai-anthropic:claude-3-haiku@20240307
Changes: 6
CORRECTED OUTPUT
TECHNICAL AUDIT: QUANTUM PROCESSOR THERMAL LOAD (REV. 2026)
The refrigeration manifold, which was originally prototyped in the late 1990s, demonstrated a significant thermal drift of ± 0.05 K during the sub-Kelvin cooling phase. We modelled the superconducting state transitions using the 2024 program logic, but the sequence was canceled when the micro-leak reached 15 µL per minute.
A secondary anomaly was detected in the color-coded fiber optics at a frequency of ~ 4.5 x 10^9 Hz. The lead physicist, the hardware specialist, and the cryogenic technician must re-calibrate the modelling software before the 2020s end. Currently, the reliability margin is 98.5%, which is a 3%
groq:llama-3.3-70b-versatile
Changes: 8
CORRECTED OUTPUT
TECHNICAL AUDIT: QUANTUM PROCESSOR THERMAL LOAD (REV. 2026)
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