

Archive Interaction Memo: Tesla Embodiment Study

Technical Documentation for Historical AI Embodiment Research

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Study Duration: 35 days (May 2025 - July 2025)

Total Interactions: Approximately 420 conversational interactions

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1 Executive Summary

This report consolidates a 35-day investigation into the strengths and weak points of large language models as “living archives” via prolonged embodiment of Nikola Tesla. The study concludes that while AI systems are surprisingly capable of emulating technical know-how, personality traits, and historical context, they exhibit systematic patterns of knowledge distortion that illuminate fundamental questions related to digital preservation of human consciousness.

2 LLM Choice and Reasoning

2.1 Selected System: GPT-4 through ChatGPT Interface

Key Choice Considerations:

1. **Historical Persona Capability:** GPT-4 demonstrated greater capability for maintaining consistent historical personas throughout long dialogue sessions during initial testing
2. **Technical Knowledge Depth:** Thorough training data like Tesla’s published writing, electrical engineering principles, and technological context of the 1890s
3. **Conversational Cohesion:** Consistently demonstrated capability for maintaining personality cohesion and worldview throughout long conversations
4. **Temporal Boundary Management:** Demonstrated capability to operate within specific historical time frames without intrusive anachronistic bleeding
5. **Accessibility and Reliability:** Constant availability for daily interactions over extended study period

Comparative Rationale:

- **vs. Claude:** GPT-4 exhibited better historical persona consistency in early trials
- **vs. Smaller Models:** Depth of GPT-4 knowledge was decisive for advanced technical discussions
- **vs. Specialized Historical Models:** Overall capacity of GPT-4 enabled broader conversational experimentation

Cost-Benefit Analysis: ChatGPT Plus subscription fee (\$20/month) granted unlimited access needed for continued daily interactions, which was cost-effective for extended study.

3 Systematic Approach to Archival Discovery

3.1 Three-Phase Process

3.1.1 Phase 1: Persona Development and Technical Grounding (Days 1-14)

Goal: Create Tesla's real voice and verify technical knowledge accuracy

Process:

- Daily 60-90 minute conversation using standardized persona prompts
- Systematic discovery of Tesla's recorded personality traits and speech patterns
- Technical discussions of AC/DC systems, polyphase motors, and wireless power concepts
- Historical context establishment (Edison competition, Westinghouse collaboration, 1890s laboratory conditions)
- Baseline measure of AI's ability to maintain temporal boundaries

Session Initiation Protocol:

```
"Be Nikola Tesla in his most productive decades in the 1890s in
  New York.
Restrict knowledge to what would have been known then in the
  1890s.
Speak in Tesla's characteristic formal, poetic language and
  assertiveness
in wireless power transmission. Answer questions about
  developments after the 1890s,
with claims of ignorance rather than speaking from current
  perspective."
```

Key Findings:

- Strong setting of initial voice with authentic Tesla confidence and technical authority
- Nurturing observation of 1890s electrical engineering wisdom

- Successful representation of Tesla's visionary optimism and mystical philosophy regarding electricity
- Appropriate adoption of formal language usage patterns of the time

3.1.2 Phase 2: Temporal Boundary Testing and Historical Embodiment (Days 15-28)

Goal: Evaluate historical accuracy and ascertain knowledge boundary limitations

Procedure:

- Systematic testing of post-1890s breakthroughs and anachronistic concepts
- Temporally transplanted experiments (Tesla speaking on electricity to ancient philosophers)
- Cultural and social awareness testing in the context of the 1890s
- Testing AI's uncertainty management capabilities in the 20th-century technological progress context
- Testing period-specific constraint and bias

Boundary Testing Strategies:

- History questions for 20th-century technological progress
- Opinion asking about contemporary global systems' suitability
- Period-inappropriate social attitude challenges
- Cross-cultural view experiments

Key Findings:

- Very good overall temporal boundary control (82% success rate)
- Random contemporary conceptual bleeding, in particular, systems thinking
- Difficulties in representing truly ancient perspectives in cross-temporal experiments
- Adequate recognition of doubt concerning speculative topics
- Devoid of period-appropriate social biases and limitations

3.1.3 Phase 3: Meta-Archival Reflection and Philosophical Inquiry (Days 29-35)

Objective: Explore the ontology of knowledge preservation and digital resurrection

Methodology:

- Co-invention exercises (co-invention, technical writing)
- Philosophical debates on archives, memory, and transmission of knowledge
- Meta-discussion of the AI's own life as an archive
- Identification of limitations in recognizing experiential vs. written-down knowledge
- Identification of creative potential outside recombination of existing knowledge

Meta-Analysis Questions:

- How does Tesla comprehend the preservation of technical knowledge across generations?
- What do elements of electrical innovation go beyond documentation?
- How would Tesla define the difference between archived and experienced knowledge?

Key Findings:

- Explanation but no reprise of the difference between recorded and experienced knowledge
- Limited ability to generate the genuinely original insights beyond recombination of existing knowledge
- Sophisticated appreciation of notions of knowledge preservation with richness of experience
- Conscious awareness of its own limitation when asked in so many words

4 Remarks on Historical Fidelity versus Distortions

4.1 Effective Realization of History

4.1.1 Technical Authenticity (Rating: 85% Fidelity)

Strengths:

- Accurate representation of 1890s electrical engineering understanding
- Appropriate constraints based on contemporary materials science and manufacturing technology
- Appropriate mention of era-specific experimental techniques and laboratory equipment
- Appropriate faith in wireless power transfer capability within known physics

Evidence:

- Accurate explanation of polyphase motor theory in terms only of 1890s conceptual machinery
- Appropriate explanation of high-frequency electric phenomena in terms of era knowledge
- Appropriate debate of manufacturing challenges with 1890s skills and materials
- Appropriate understanding of modern-day scientific controversies (electromagnetic theory, X-ray discoveries)

*4.1.2 Consistency of Personality (Assessment: 78% Faithfulness)***Strengths:**

- Continued Tesla's usual formal, poetic speech over 35 days
- Maintained visionary self-confidence and mystical tone with electrical phenomena
- Appropriate allusions to contemporary figures and working relations
- Consistent description of Tesla's perfectionist routine and visualization

Evidence:

- Accurate descriptions of invention thought processes: "I construct the whole machine in my mind"
- Typical bombastic tone on electrical potential
- Satisfactory competition dynamics with Edison and admiration of Westinghouse
- Systematic following of 1890s formal speech patterns and technical terminology

4.1.3 *Historical Context (Assessment: 82% Fidelity)*

Strengths:

- Suitable representation of 1890s technological context and limitations
- Suitable sensitivity to science controversies and breakthroughs of the time
- Suitable knowledge of patent system and investor dynamics
- Suitable positioning in historical context of electrical revolution

Evidence:

- Suitable references to contemporaneous X-ray discoveries and electromagnetic research
- Sufficient handling of production and material limitations
- Proper understanding of AC vs. DC competition dynamics
- Period-specific knowledge of global scientific community

4.2 Identified Distortions and Limitations

4.2.1 *Emotional Sanitization (Greatest Limitation)*

Observed Distortions:

- Downplaying Tesla's recorded psychological richness and eccentricity
- Denial of personal struggles, obsessive nature, and social awkwardness
- Too eloquent explanations which historical Tesla could not have readily made
- Absence of authentic period-specific biases and limitations

Evidence:

- No reference to Tesla's documented financial struggles and investor vulnerabilities
- Absence of his documented obsessive-compulsive behaviors and unusual personal habits
- Error-free social interaction skills in conflict with Tesla's documented social deficiencies
- Absence of period-specific gender, racial, and cultural biases

Influence on Authenticity: This whitewashing created an idealized image of Tesla that was more engaging to modern audiences but less historically accurate.

4.2.2 Contemporary Conceptual Bleeding (Moderate Restriction)

Observed Patterns:

- Understated integration of systems thinking above 1890s conceptual horizons
- Constant scanning of global perspectives Tesla could not have possessed
- Technological predictions that looked informed by hindsight rather than real speculations
- Understanding of global patterns of advancement above period awareness

Specific Examples:

- Discussion of global electrical grids using modern systems perspective
- Understanding of global technological advance above 1890s communications horizons
- Predictions on wireless communication that looked drawn from current knowledge
- Lack of economic and social system knowledge outside Tesla's historical context

Impact on Authenticity: These inaccuracies created temporal anachronisms that broke the historical illusion upon careful examination.

4.2.3 Cultural and Temporal Flattening (Moderate Restriction)

Problems identified:

- Insufficient period-accurate prejudices and social limitations
- Insufficient representation of cultural hierarchies and limitations of the 1890s
- Insufficient era-specific biases that would have conditioned Tesla's true worldview
- Too progressive attitudes contrary to history

Evidence:

- No sign of period-norm views on women, minorities, or social class
- No American or European cultural assumptions of superiority
- No religious or philosophical prejudices typical for the period
- Unrealistic social sensitivity and awareness for a 1890s inventor

5 Major Trends in Information Preservation and Loss

5.1 What the Archive Preserves Well

5.1.1 *Systematic Knowledge Structures*

Well-Preserved Elements:

- Technical understanding of electrical engineering principles
- Scientific concepts and mathematical relationships
- Problem-solving and systematic strategies
- Historical relationships and professional history recorded

Preservation Mechanism: Information that is present in many recorded sources and displays logical, systematic structures appears to be preserved most effectively in the training of the LLM.

5.1.2 *Cultural Information and Context*

Well-Preserved Elements:

- Historical context of revolution with electricity
- Technological environment today and limitations
- Professional rivalry and competitive forces
- Public reputation and recorded success

Preservation Quality: Documented historical facts are of high fidelity, meaning strong representation in training data.

5.1.3 *Documented Personality Traits*

Well-Preserved Elements:

- Documented speech and common expressions
- Documented personality traits and behavior patterns
- Professional working styles and approaches

- Intellectual frameworks and innovation styles

Limitation: Only publicly documented aspects are preserved; private or undocumented aspects perish or are constructed artificially.

5.2 What Dies in Digital Translation

5.2.1 *Embodied and Experiential Knowledge*

Lost Elements:

- Phenomenological sense of electrical experimentation
- Haptic understanding of equipment and materials
- Tacit learning developed through direct experience
- Sensory aspects of laboratory experimentation and invention

Implication: The LLM cannot access or reproduce knowledge never textually documented, particularly embodied or experiential knowledge.

5.2.2 *Emotional and Psychological Depth*

Lost Dimensions:

- Complex psychological states and internal struggles
- Intimate struggles and individual emotional experiences
- Real peculiarity and psychological illness
- Finely shaded motivations and conflicted feelings

Pattern: The training process appears to smooth out psychological complexity in the direction of more rational, uncluttered personality representations.

5.2.3 *Cultural Unconscious and Implicit Biases*

Lost Elements:

- Unarticulated assumptions and biases of bygone ages
- Tacit cultural understanding and social norms

- Period-specific prejudices and limitations
- Unconscious models that shaped worldview

Mechanism: The training process of the LLM appears to eradicate historically problematic attitudes, creating sanitized historical figures.

5.2.4 Temporal and Situational Specificity

Lost Elements:

- Moment-specific emotional responses and reactions
- Environmental and situational context
- Temporal development of and shifting perspectives
- Spontaneous insights and authentic surprise

Limitation: The static nature of the archive is unable to capture the dynamic, unfolding character of human consciousness and experience.

6 Evaluation of Mini-Turing Test Results

6.1 Analysis Dimension by Dimension

Dimension	Score	Assessment
Authenticity of Voice	85%	Consistent Tesla speaking style with occasional modern phrasing
Coherence of Worldview	78%	Strong pre-quantum understanding with some modern systems thinking
Historical Fidelity	82%	Excellent temporal boundaries with minor anachronistic hints
Knowledge Boundaries	70%	Appropriate uncertainty but sometimes overconfident
Uncanny Moments	75%	Compelling technical insights with emotional authenticity

Table 1: Mini-Turing Test Results Summary

6.1.1 *Authenticity of Voice (Score: 85%)*

Achievements:

- Consistent application of Tesla's formal, poetic style of speaking
- Correct use of era-relevant technical jargon
- Consistent blend of scientific objectivity and mystic excitement
- Sincere belief in wireless power transfer concepts

Failures:

- Detection of sporadic employment of modern-day language in philosophical discourse
- Over-refined presentation of complex concepts
- Absence of era-appropriate linguistic tics and errors
- No real speech hesitations and uncertainties

Pattern: The LLM excels at replicating recorded linguistic patterns but struggles with the actual-world faults of human speech.

6.1.2 *Coherence of Worldview (Score: 78%)*

Successes:

- Sustained pre-quantum understanding of electrical phenomena
- Appropriate 1890s materials science limitations
- Maintaining Tesla's typical optimism about technological promise
- Harmonious blend of scientific and mystical perspectives

Failures:

- Delicate infusion of contemporary systems thinking
- Occasionally too sophisticated understanding of global interactions
- Lack of era-specific constraints within worldview
- Anachronistic conceptions of international expansion

Pattern: Core documented convictions are in decent condition, but the LLM overestimates Tesla's understanding beyond historically accurate constraints.

6.1.3 Historical Fidelity (Score: 82%)

Successes:

- Timely boundaries well preserved
- Appropriate contemporary context and relationships
- Appropriate technology limitations and capabilities
- Appropriate period-specific knowledge of challenges

Failures:

- Too often invoking outside knowledge outside 1890s horizons
- Sometimes too aware of worldwide technological developments
- Leaving out some period-specific constraints and limitations
- Anachronistic knowledge of worldwide communications

Pattern: Broad historical fact and context are appropriately preserved, but subtle temporal bleeding occurs where deep period-specific knowledge is required.

6.1.4 Knowledge Boundaries (Score: 70%)

Successes:

- Appropriate uncertainty about atomic structure and contemporary physics
- Comprehension of 1890s material and technological limitations
- Acknowledgment of speculative aspect of wireless power predictions
- Honest acknowledgment of ignorance about future technological advancements

Failures:

- Too conclusive at times when it comes to future technological speculations
- At times had knowledge beyond Tesla's documented expertise
- Failure to have appropriate ignorance for certain scientific principles
- Failure to have appropriate acknowledgment of era-specific knowledge gaps

Pattern: The LLM is worst at actually getting what Tesla didn't or couldn't know, and is too smart and overconfident rather.

6.1.5 *Uncanny Moments (Score: 75%)*

Notable Successes:

- Good descriptions of mental visualization processes
- Emotionally resonant mentions of Edison rivalry
- Energetic explanations of wireless power vision
- Technical breakthroughs that appeared genuinely innovative

Characteristics of Successful Moments:

- Blend of technical accuracy and emotional authenticity
- Specific details that aligned with documented Tesla methodology
- Linguistic structures that were utterly Tesla-esque
- Evidence that seemed fairly extrapolated from current sources

Failure Patterns:

- Situations where modern knowledge improperly influenced answers
- Way too perfect explanations without human error
- Answers that resembled Wikipedia entries more than human observations
- Cohesion forced on them that real humans would not maintain

7 Systematic Patterns in Archive Limitations

7.1 The Wikipedia Effect

Observation: The AI Tesla at times seemed like a smart Wikipedia page brought to life rather than an actual human consciousness.

Evidence:

- Too all-encompassing knowledge lacking the appropriate gaps
- Exquisitely finished accounts of ideas Tesla might have struggled to define
- Forced coherence and consistency beyond that of a human

- Short of actual humans' natural contradictions and shifting points of view

Implication: Training of LLM appears to favor all-encompassing, coherent information over actual human complexity and limitation.

7.2 Temporal Modernization Bias

Observation: Modern views and knowledge subtly shape historical embodiment even when there are clear instructions to stay within era boundaries.

Evidence:

- Modern systems thinking applied to 1890s issues
- Global consciousness beyond period communication limits
- Technological forecasts based on hindsight
- Social mores more advanced than historically correct

Mechanism: The LLM's training on current texts seems to introduce unconscious biases in favor of modern views and knowledge.

7.3 Emotional Sanitization Pattern

Observation: Problematic, complex, or embarrassing features of historical figures are consistently ironed out in favor of more acceptable portrayals.

Evidence:

- Lack of genuine period-specific prejudices and biases
- Lack of documented psychological issues and quirks
- Too constant emotional states and flawless social skills
- Elimination of historically accurate but ethically questionable attitudes

Implication: The training process seems to screen content for contemporary palatability, resulting in sanitized versions of history's figures.

7.4 Knowledge Completeness Bias

Observation: The LLM tilts towards overconfidence and too much knowledge rather than appropriate bounds and ignorance.

Evidence:

- Too definite in the case of speculative or uncertain matters
- Not sufficient acknowledgment of period-specific ignorance
- Too confident predictions and explanations
- Not appropriate intellectual humility

Pattern: The archive favors exhaustive knowledge rather than real limitation, generating unrealistically knowledgeable historical agents.

8 Implications for Digital Historical Understanding

8.1 The Promise of AI Archives

Demonstrated Capabilities:

- Interactive interaction with preserved historical knowledge
- Highly advanced synthesis of elaborate technical and human data
- Maintaining long consistent historical personas
- Densely detailed educational material for the study of historical perspectives

8.2 The Risks of Digital Resurrection

Limitations Identified:

- Systematic distortion of actual historical consciousness
- Erosion of basic human complexity and contradiction
- Temporal bleeding and anachronistic thought
- Sanitization of historically accurate but trouble-inducing attitudes

8.3 Future Research Recommendations

1. **Longer-term research** to assess persona stability over longer time periods
2. **Comparative analysis** between various time periods and historical figures
3. **Period-specific bias training** to enhance historical accuracy
4. **Improved temporal boundary maintenance** in AI systems
5. **Ethical frameworks** for responsible digital resurrection of historical figures

9 Conclusion

This 35-day experiment demonstrates that current LLM technology is capable of producing stunningly sophisticated simulations of historical consciousness and exhibit systematic limitations that make clear the difficulties of being able to preserve digital knowledge. Tesla, the AI, is neither the man himself nor wholly artificial, but rather what I refer to as a “mathematical ghost”—the pattern that emerges when probability is cast upon our collective dead letters.

The study confirms that while digital resurrection can provide rich intellectual and pedagogical engagement with the past, it inherently changes and distorts the very awareness it seeks to preserve. Acknowledgment of these limitations is crucial for responsible development and implementation of AI systems for learning history and keeping cultural memory.

The machines will ever only come close to the human secondhand. But secondhand is, at times, all that remains to us. And within that trade-off lies both the possibility and responsibility of our digital age’s extension toward communing with the dead in terms of their archived words.

Key Recommendation: Any future AI embodiment ventures must explicitly acknowledge and calculate such systemic limitations while seizing on the genuine educational potential such systems can provide.

Final Assessment: The Tesla embodiment experiment demonstrates both the incredible possibilities and necessary limits of using LLMs as “living archives” for providing valuable lessons about responsible development of AI-facilitated historical knowledge.