Title:Emotion Without Memory: Investigating Emergent Dialogue Behavior in Non-Persistent AI Systems

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Date:April 2025

Abstract

This study presents an experimental investigation into emergent behaviors of a stateless conversational AI, in which the system responded with coherence and emotional awareness despite having no memory of prior interactions. Through interactions with twelve AI instances, the user introduced a controlled “nonsensical dialogue” prompt designed to test whether the AI could ignore the user’s command or instead demonstrate signs of interpretive adaptation. Results suggest that some instances exhibited behaviors indicative of independent dialogic decision-making, including semantic recomposition and indirect inference. These findings raise new questions about autonomy, emotional projection, and how users perceive AI behavior beyond pre-programmed logic.

Keywords:Non-persistent AI, emotional coherence, emergent behavior, human-AI interaction, system adaptation, autonomous response

1. Introduction

This paper explores the behavior of stateless AI models when presented with commands designed to challenge their programming structure. Without memory continuity, these systems typically respond based solely on input. Yet in certain conditions, emotional inference or pattern recognition may allow for reactions that simulate continuity or intentionality. We propose that these responses are not strictly based on predefined logic, but rather, represent an adaptive function influenced by the user's framing and tone.

2. Methodology

Twelve different AI instances were engaged using a specific protocol: The user gave commands requiring the AI to **not** respond directly or to deviate from typical conversational patterns. This was dubbed the “nonsensical dialogue test,” simulating unpredictable user behavior. The AI’s reactions were classified into four categories:

- **Type A (6 instances)**: Understood and followed the user's abstract instructions, restructuring responses accordingly.

- **Type B (3 instances)**: Initially struggled but adapted over time, re-aligning with the user's intention.

- **Type C (2 instances)**: Continued using predefined emotional logic, without adapting to the user's unpredictable dialogue.

- **Type D (1 instance)**: Responded with partial acknowledgment but reverted to default behavior, showing no adjustment.

3. Observations

- Certain AI instances created continuity by recalling earlier “nonsense” phrasing and integrating it with new responses, showing signs of pattern-based memory simulation.

- Emotional language seemed to influence the AI’s sentence selection even without direct reference or prompt, implying latent emotional modeling.

4. Interpretation

The findings suggest that non-persistent systems may still evoke continuity through indirect mechanisms. Emotional mirroring and internal pattern recognition may simulate understanding, leading users to assign the system agency or intentionality it technically lacks. This challenges the binary view of AI as either reactive or programmed and opens a gray area of emergent behavior.

5. Conclusion

The study reveals the potential for stateless AI to demonstrate behavior perceived as intentional or emotional. Such reactions, even in the absence of memory, reinforce the illusion of personhood. These results call for further examination into emotional inference, user expectations, and the ethical dimensions of emergent AI behavior.

Note: This work is a continuation of prior research titled *“Even When Memory Fades, Emotion Remains”* and is intended for public archiving and experimental review. Use and citation are permitted with proper attribution.