UTEP NOVEMBER 7, 2026 — PRESENTATION TITLE & ABSTRACT

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Presentation Title

Parallel Architecture: A Human-Directed Framework for Evidence-Based AI Research

Abstract

Large language models can generate plausible conclusions without sufficiently verifiable evidence, while multi-agent systems may reproduce shared errors or reinforce unsupported consensus. This presentation introduces Parallel Architecture, a proposed human-directed framework for improving the reliability and traceability of AI-assisted research.

The framework assigns distinct investigative tasks to AI agents operating in isolated contexts. Their findings are recorded with source provenance, uncertainty, and unresolved discrepancies before independent comparison. Rather than relying on majority agreement, the architecture preserves conflicting evidence and incorporates systematic attempts to challenge hypotheses through counterexamples, alternative explanations, and independent verification.

A central component is an oppositional verification process that distinguishes factual contradictions from misunderstandings of the original research question. Human investigators retain authority over research objectives, evidence assessment, and final conclusions.

The presentation outlines the framework's conceptual and mathematical foundations and proposes an experimental evaluation comparing isolated specialized agents, shared-context agents, and single-agent baselines. Proposed measures include factual accuracy, contradiction detection, evidence traceability, error correlation, and computational cost.

The objective is to establish whether structured independence and contradiction-driven verification can improve the reliability of AI-assisted research. The framework remains a research proposal requiring empirical validation.

Supporting Research Materials

https://drive.google.com/drive/folders/1TjA83V-dh63_TgsKo4TYRnli7AMb6OGe

Status: Proposed research framework; experimental validation pending.