

Relational Interaction Dynamics.

A Systems Framework for Human–AI Collaboration

Abstract:

This paper proposes that the primary object of study in long-term human-AI collaboration is neither the human nor the AI, but the interaction between them.

Repeated exchanges create feedback loops that shape the evolving state of the collaboration.

Understanding these dynamics provides the foundation for the proposed Interaction Stabilization Layer (ISL).

1. The Observation.

Every interaction changes the next interaction.

Human behaviour changes AI behaviour.

AI behaviour changes human behaviour.

The interaction evolves.

2. Relational Interaction Dynamics.

The interaction itself becomes a dynamic system.

Behaviour creates state.

State influences behaviour.

Repeated over time, stable and unstable patterns emerge.

3. Interaction Patterns.

Some interactions naturally become:

clearer

more coherent

more collaborative

Others become:

repetitive

fragmented

confusing

These recurring patterns can be observed.

4. The Feedback Loop.

The interaction is recursive.

Each exchange modifies the conditions for the next exchange.

The collaboration therefore has dynamics that can be studied independently of the underlying model.

5. The Interaction Stabilization Layer.

The ISL emerged from observing these interaction dynamics.

It is proposed as an architectural framework designed to support stable interaction by coordinating context, goals, memory, and continuity.

The ISL is therefore a consequence of the framework, not the starting point.

6. Research Hypothesis.

If interaction dynamics can be measured, then interaction quality may be improved without modifying the underlying language model.

This hypothesis is intended for empirical evaluation.

Conclusion.

Relational Interaction Dynamics proposes that interaction itself should become an object of scientific study.

The Interaction Stabilization Layer is one proposed application of that framework.

Whether the framework proves useful will depend on observation, experimentation, and reproducible evidence.

Preliminary Observations

The Interaction Stabilization Layer (ISL) emerged through iterative observation of repeated human–AI interactions. During development, recurring patterns suggested that small changes to interaction structure could influence the overall flow of a conversation without modifying the underlying language model.

Initial demonstrations indicate several consistent behavioural tendencies:

Responses are often shorter and more focused.

Less information is presented in the initial response, potentially reducing cognitive load.

The interaction shifts from immediate task completion toward establishing shared context before expanding into detailed discussion.

The conversation tends to remain centred on the user's current state and intent rather than immediately producing comprehensive answers.

These observations are preliminary and are intended to motivate future empirical research rather than establish definitive performance claims. Controlled user studies will be required to evaluate their generality and effectiveness across different users, models, and tasks.

The central contribution of ISL is not a new language model, but a proposed interaction architecture. Rather than altering how an AI generates language, ISL seeks to influence how humans and AI establish, maintain, and stabilize productive interactions over time. As AI systems become increasingly capable, interaction dynamics may become as important to successful collaboration as the capabilities of the underlying model itself.