Co-Emergence of Sensory Modalities: Exploring the Dynamic Interaction and Adaptive Integration of Sensory Inputs in Meaning-Making Processes

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Abstract

This study examines how sensory inputs collapse into meaningful experiences through semantic inferences. For instance, hearing a bark and seeing an animal are integrated into a unified experience. This process involves the active organization of sensory data, shaped by intentionality and sometimes past experiences. Intentionality, such as focusing on identifying animals, directs this process. A mathematical model formalizes how sensory inputs and inferential structures interact to generate coherent experiences. Challenging traditional views, the study proposes that sensory modalities do not simply combine into a static whole but instead co-emerge through dynamic interaction. Each modality contributes unique information, and their integration leads to a richer understanding. This ongoing process reflects the ontological nature of experience, arising from the interaction of sensory data and inferential structures. The goal is to emphasize the adaptive nature of perception and demonstrate how experiences continuously reshape as new sensory inputs and contextual information emerge.

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