

## SFB/TR 8 Spatial Cognition / IQN Video Conference

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### **Modelling reference frames of space and time in language**

Spatial expressions like "left", "in front of" etc. require conceptual reference frames for their interpretation. Modelling this phenomenon systematically is crucial for the (automatic, psycholinguistic, or other) interpretation of spatial language and therefore of interest for various strands of research in Spatial Cognition.

Previous models have typically focused on static relationships between objects that are topologically separate from each other. For example, Levinson's widely accepted framework (Levinson, 2003) distinguishes relative, intrinsic, and absolute reference frames. Building on and expanding this useful categorization, we propose a model that is flexible and abstract enough to encompass static as well as dynamic situations, involving objects that are related to each other in either external (separate) or internal (nested) ways. The formalization in the functional language Haskell exploits the model's core idea to distinguish roles and their fillers. The framework, which is based on English, furthermore allows for identifying and accounting for the relationship between spatial and temporal concepts systematically. It highlights the distinction between conceptually similar (spatial and temporal) structures reflected in language on the one hand, and metaphorical transfer of clearly spatially-based concepts on the other.

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