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Computational mechanisms for resolving misunderstandings

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Abstract

Imagine discussing yesterdays dinner with a friend: It wasn't particularly tasty. Your friend concurs, it was very salty! Thinking you were talking about the appetizer (which wasnt salty at all), youre forced to reconsider which course your friend was talking about. Was the appetizer salty to her? Was she talking about the main course? People encounter misunderstandings in everyday conversation, yet quickly and seamlessly resolve them. How people do this is an explanatory challenge: the thing being talked about (i.e., the referent) is often not physically present during the conversation. Hence, theres no easy way for interlocutors to establish common ground via ostensive signaling (e.g., by pointing at the dish). We develop a model of speakers that use pragmatic reasoning to infer the referent inferred by listeners. We explore the performance of this model using agent-based simulated conversations. The results imply necessary and sufficient conditions for successful updating.

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