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Title

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Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 44(44)

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Publication Date

2022

Peer reviewed

Hierarchical task knowledge constrains and simplifies action understanding

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Abstract

Human social interactions require understanding and predict- ing other people's behavior. A growing body of work has found that these inferences are structured around an assumption that agents act rationally and efficiently in space. While powerful, this view treats action understanding in a vacuum, ignoring that much social inference happens in the context of familiar, hierarchically structured events (e.g.: buying groceries, ordering in a restaurant). We propose that social and world knowledge is critical for efficiently interpreting behavior and test this idea through a simple block-building paradigm, where participants infer an agent's sub-task (study 1a), next action (study 1b), and higher-level goal (study 1c), from very sparse observations. We compare these inferences against a Bayesian model of goal inference that exploits task structure to interpret agents' actions. This model fit participant judgments with high quantitative accuracy, highlighting how world knowledge may help support social inferences in a rich and powerful way. Keywords: Computational modeling; Social cognition