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Proceedings of the Annual Meeting of the Cognitive Science Society

Title

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Permalink

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Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 38(0)

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Publication Date

2016

Peer reviewed

Instance-based Learning in Multi-cue Diagnosis

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Abstract: Decision heuristics are often described as fast and frugal, taking little time and few computations to make a good decision (Gigerenzer & Todd, 1999). Fast & Frugal Trees (F&FTs) are a type of decision heuristic that are a special case of decision trees in which there is a possible exit out of the decision process at every node in the tree (Luan, Schooler, & Gigerenzer, 2011). We present predictions from a computational process model of learning in a multi-cue diagnosis task with and without information acquisition costs and across different penalty values for errors. The model uses Instance-Based Learning Theory (IBLT) to acquire new knowledge and makes precise performance predictions across a range of dependent variables. We will compare the a priori model predictions to F&FT-constrained machine learning results on the same stimuli and also to empirical results collected from human participants making decisions in the same environment.