

Bounded-rational agents

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Abstract

In this talk, I will present the classical notions of rationality developed in the field of cognitive modelling by reviewing the main paradigms used in the context of artificial intelligence. Namely I will present the distinction between models of classical rationality (CR), bounded models (RM) and bounded-rational models (BRM) and will show how all of them make different design assumptions about how to build artificial minds [Lieto, 2021], [Lieto and Radicioni, 2016]. Finally I will present two case studies on the use of bounded rational models to extended the knowledge processing capabilities of cognitive agents [Lieto *et al.*, 2018b], namely: the Dual PECCS linguistic categorization system ([Lieto *et al.*, 2015], [Lieto *et al.*, 2016], [Lieto *et al.*, 2017b] [Lieto, 2019] [Lieto, 2014] [Lieto *et al.*, 2017a]) and the TCL reasoning framework ([Lieto and Pozzato, 2020], [Lieto and Pozzato, 2018] [Lieto *et al.*, 2019b] [Chiodino *et al.*, 2020a] [Lieto *et al.*, 2021]) that have been developed to address, respectively, the problem of typicality effects and the one of commonsense compositionality, in a way that is integrated or compliant with different cognitive architectures [Lieto *et al.*, 2017b] [Lieto *et al.*, 2019a], [Chiodino *et al.*, 2020b] thus extending their knowledge processing capabilities [Lieto *et al.*, 2018a].

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