Interval Orders and Biorders: Under-explored Playgrounds for NMR and Belief Revision (Invited Talk, Abstract)

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Abstract

The notion of orderings over possible worlds to represent comparative normality or plausibility is a fundamental tool in the study of semantics for nonmonotonic reasoning (NMR) and belief revision (BR). The dominant model is that of a total preorder, which is central to AGM belief revision and to rational consequence in KLM-style preferential reasoning. Other, more general, types of orderings, specifically interval orders and biorders, have been studied in the theory of rational choice, but have received less attention in NMR and BR. Interval orders, introduced by Fishburn, associate to each possible world a non-negative *interval* of plausibility, while biorders, studied by Aleskerov, Bouyssou and Monjardet, generalise interval orders by allowing the intervals to be have negative length. This talk, based on recent and ongoing collaboration with Ivan Varzinczak, will focus on these lesser-known kinds of ordering. Specifically we will look at how interval orders can be used to address the problem of conditional inference, and how biorders offer a fresh perspective on credibility-limited belief revision.

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