A Propositional Typicality Logic for Extending Rational Consequence

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Abstract

We introduce Propositional Typicality Logic (PTL), a logic for reasoning about typicality. We do so by enriching classical propositional logic with a typicality operator of which the intuition is to capture the most typical (or normal) situations in which a given formula holds. The semantics is in terms of ranked models as studied in KLM-style preferential reasoning. This allows us to show that KLM-style rational consequence relations can be embedded in our logic. Moreover we show that we can define consequence relations on the language of PTL itself, thereby moving beyond the propositional setting. Building on the existing link between propositional rational consequence and belief revision, we show that the same correspondence holds in the case of rational consequence and belief revision defined on the language of PTL. Finally we also investigate different notions of entailment for PTL and propose two appropriate candidates.