Conditional Reasoning and Relevance

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Abstract

The paper concerns conditional reasoning and, in particular, the case, where the antecedent of a conditional is true but its consequent is unknown. We pursue the idea to apply abduction in order to find an explanation for the consequent. If such an explanation can be abduced then new conditionals can be generated which are known to be true. This leads to two problems, viz. that a consequent should not abduce itself and that the antecedent should be strongly relevant to the consequent of a conditional. Both problems are solved within the Weak Completion Semantics, a new, computational, multi-valued, and non-monotonic logic paradigm which has already been successfully applied to different human reasoning problems including the suppression and the selection task. The notion of strong relevance developed in the paper is with respect to the models of a logic program representing the background knowledge of a human reasoning episode and, thus, deviates from the mostly proof theoretic definitions of relevancy in relevance theory.