

Inference in Conditional Probability Logic

Niki Pfeifer; Gernot D. Kleiter

Abstract: An important field of probability logic is the investigation of inference rules that propagate point probabilities or, more generally, interval probabilities from premises to conclusions. Conditional probability logic (CPL) interprets the common sense expressions of the form “if . . . , then . . . ” by conditional probabilities and not by the probability of the material implication. An inference rule is *probabilistically informative* if the coherent probability interval of its conclusion is not necessarily equal to the unit interval $[0, 1]$. Not all logically valid inference rules are probabilistically informative and *vice versa*. The relationship between logically valid and probabilistically informative inference rules is discussed and illustrated by examples such as the MODUS PONENS or the AFFIRMING THE CONSEQUENT. We propose a method to evaluate the strength of CPL inference rules. Finally, an example of a proof is given that is purely based on CPL inference rules.

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