A Nonstandard Modification of Dempster Combination Rule.

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Abstract: It is a well-known fact that the Dempster combination rule for combination of uncertainty degrees coming from two or more sources is legitimate only if the combined empirical data, charged with uncertainty and taken as random variables, are statistically (stochastically) independent. We shall prove, however, that for a particular but large enough class of probability measures, an analogy of Dempster combination rule, preserving its extensional character but using some nonstandard and boolean-like structures over the unit interval of real numbers, can be obtained without the assumption of statistical independence of input empirical data charged with uncertainty.

Keywords: