Dempster-Shafer recombination of confidence distributions

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Abstract:

Naturally, it is of interest to provide a systematic way to combine the information from these studies.

Examples of such situations include clinical trials, key comparison trials and other problems of practical importance. Singh et al (2005) provide a compelling framework for combining information from multiple sources using the framework of confidence distributions. In this paper we investigate the feasibility of using the Dempster-Shafer recombination rule on this problem. We derive a practical combination rule and show that under assumption of asymptotic normality, the Dempster-Shafer combined confidence distribution is asymptotically equivalent to one of the method proposed in Singh et al (2005). Numerical studies and comparisons for the common mean problem and the odds ratio in 2×2 tables are included.

Keywords: Confidence Distribution, Dempster-Shafer calculus, Generalized Fiducial Inference, Meta analysis.