

Pattern Recognition and Information Fusion Using Belief Functions: Some Recent Developments

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The Transferable Belief Model (TBM) is a general framework for reasoning with uncertainty using belief functions [8]. Of particular interest is the General Bayesian Theorem (GBT), an extension of Bayes's theorem in which probability measures are replaced by belief functions, and no prior knowledge is assumed [7,6].

Until recently, applications of the GBT have been fairly limited, mainly because of lack of methods for constructing belief functions from observation data. The availability of such methods [4,2,1] as well as new combination rules for merging partially overlapping items of evidence [5] now extend the applicability of the TBM to a wider class of statistical pattern recognition and information fusion tasks. These recent developments will be reviewed, and applications to various problems such as novelty detection [3] and partially supervised learning using mixture models will be discussed.

This talk is mostly self-contained. Relevant material (papers, slides) can be found at <http://www.hds.utc.fr/~tdenoeux>.

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