Tutorial
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Theory of belief functions: recent advances and applications to information fusion and machine learning

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Recently, the theory of belief functions has gained increasing attention as a sound theoretical framework for representing all kinds of uncertainty encountered in a variety of real-world application. This course will start from basic concepts, with emphasis on the minimal commitment principle, which plays a pivotal role in the theory. Recent advances will then be reviewed, including t-norm-based combination rules, new ways of modeling contextual information, and belief functions defined on non-Boolean lattices. Finally, applications to machine-learning (single-label and multi-label classification, evidential clustering, classification and clustering ensembles) and state estimation will be presented.