

# Meeting on Modern Aspects of Analysis and Scientific Computing

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## Abstract of Talk

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### LEARNING POSSIBILISTIC LOGIC THEORIES FROM DATA

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Possibilistic logic is a generalization of classical logic, in which formulas are associated with certainty degrees from the unit interval. At the semantic level, a possibilistic logic theory represents a possibility distribution over the set of possible worlds. While a wide range of applications have already been studied, only few authors have looked at methods for learning possibilistic logic theories from data. In this talk, I will discuss two such methods. The first method relies on the ability of possibilistic logic to compactly represent sets of default rules of the form “if A then typically B”. In particular, the proposed method is aimed at learning a possibilistic logic theory from a large set of noisy default rules. Among others, this allows us to use crowdsourcing methods for learning consistent domain theories. For the second method, the input consists of a set of examples that are represented using standard feature vectors. The proposed method learns a possibilistic logic theory that models a probability distribution that is estimated from these examples. In this case, the machinery of possibilistic logic is used for probabilistic inference. The learned possibilistic logic theories can be used for maximum a posteriori inference, as well for evaluating marginal and conditional probabilities. In this way, possibilistic logic can be used as the basis for interpretable machine learning methods.