

Inference for Probabilistic Logic Programming with Continuous Distributions

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Probabilistic logics combine the expressive power of logic with the ability to reason with uncertainty. Given the discrete nature of logical languages, it is natural to use these languages for modelling discrete distributions. However, for many practical applications, both discrete and continuous distributions are required. In this talk, I will discuss several approaches for dealing with continuous distributions as part of a PLP language. Furthermore, I will discuss in more detail our recent PLP approach for dealing with continuous distributions by means of probability intervals. In particular, the Iterative Hybrid Probabilistic Model Counting (IHPMC) algorithm will be discussed, which enables approximating a large class of hybrid problems with a bounded error. It has been shown that the current implementation can outperform current sampling implementation, in particular when the programs contain sufficient logical structure.