Dissociation-Based Oblivious Bounds for Weighted Model Counting

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Abstract

We consider the weighted model counting task which includes important tasks in graphical models, such as computing the partition function and probability of evidence as special cases. We propose a novel partition-based bounding algorithm that exploits logical structure and gives rise to a set of inequalities from which upper (or lower) bounds can be derived efficiently. The bounds come with optimality guarantees under certain conditions and are oblivious in that they require only limited observations of the structure and parameters of the problem. We experimentally compare our bounds with the mini-bucket scheme (which is also oblivious) and show that our new bounds are often superior and never worse on a wide variety of benchmark networks.

References

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