Tensor decomposition, convex optimization, and multitask learning

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Tensor factorization, or multilinear modelling, has received much attention recently. Compared to its two-dimensional counterpart, matrix factorization, many properties related to tensors, for example, the rank, are known to be hard to compute. Recently new approaches based on convex relaxation of tensor (multilinear-)rank have emerged. Although, these new methods come with worst case performance guarantees, they tend to be less efficient than previously known greedy algorithms in practice. I will overview and discuss the possibility and limitation of these approaches from the perspective of computation-statistics trade-off. Furthermore, I will present a recent application of the above idea to multi-task learning.

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