Characteristic Tensor Kernels[*]

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Abstract

Maximum mean discrepancy (MMD) and Hilbert-Schmidt independence criterion (HSIC) are popular techniques in data science to measure the difference and the independence of random variables, respectively. Thanks to their kernel-based foundations, MMD and HSIC are applicable on a variety of domains including documents, images, trees, graphs, time series, mixture models, dynamical systems, sets, distributions, permutations. Despite their tremendous practical success, quite little is known about when HSIC characterizes independence and MMD with tensor kernel can discriminate probability distributions, in terms of the contributing kernel components. In this talk, I am going to present a complete answer to this question, with conditions which are often easy to verify in practice.

- Preprint: `https://arxiv.org/abs/1708.08157`