Tensor Product Kernels: Independence and Beyond[*]

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Abstract

Maximum mean discrepancy (MMD) and Hilbert-Schmidt independence criterion (HSIC) are among the most popular and successful approaches in machine learning to quantify the difference and the independence of random variables, respectively. Thanks to their kernel-based foundations, MMD and HSIC are applicable on a wide variety of domains including documents, images, trees, graphs, time series, dynamical systems, sets, distributions, permutations. Despite their efficiency in numerous areas, 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 my talk, I am going to present a simple and complete answer to this question.

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