From Distance Covariance to Hilbert-Schmidt Independence Criterion*

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Abstract

Distance covariance (DC) and its generalization to possibly more than two components called Hilbert-Schmidt Independence Criterion (HSIC) are among the most widely used measures of independence in statistics and machine learning. Despite their popularity and success in numerous applications, quite little is known about when HSIC captures independence. I am going to provide a complete answer to this question and shed light on several differences when working with two (DC) and multiple components (HSIC).

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