

Dissertation press release**13.02.2020**

Multivariate dependencies found in the kernel space can be interpreted in the Euclidean space

Title of the dissertation	Methods for Interpreting Kernel Canonical Correlation Measures Menetelmiä ydinfunktioilla laajennettujen riippuvuusmittojen tulkintaan
Contents of the dissertation	<p>In general, it is difficult to interpret dependence measures computed in the kernel space since we have no access to the explicit representations of the data space variables. Standard dependence measures computed in the Euclidean space using the data space variables, such as the canonical correlation, are straightforward to interpret. However, due to the limitations of the space, these measures can only find monotone or linear dependencies. Non-monotone dependencies can be found in the non-Euclidean kernel space. This thesis presents novel methods that enable the interpretation of kernel space dependencies similarly as measures computed in the Euclidean space.</p> <p>The proposed methods improve the interpretation of kernel canonical correlation and the Hilbert-Schmidt independence criterion. In particular, the kernel canonical correlation can be interpreted through clustergrams or pre-images. The presented optimisation strategies for Hilbert-Schmidt independence criterion improve the scalability of the measure and interpretability in high-dimensional datasets. The methods can be applied to other kernel dependence measures.</p>
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